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BRAITHWAITE'S RETROSPECT.

VOL. LIX. JANUARY—JUNE, 1869.

THE

RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE, M.D.,

LATE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN AT THE LEEDS SCHOOL OF MEDICINE, ETC.

AND

JAMES BRAITHWAITE, M.D. Lond.

VOL. LIX. JANUARY—JUNE,

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SYNOPSIS,

(ARRANGED ALPHABETICALLY), CONTAINING

A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THIS VOLUME, SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE HALF-YEAR.

AFFECTIONS OF THE SYSTEM GENERALLY.

ALCOHOLIC STIMULATION IN FEVER.—It is quite an error to conceive of alcoholic stimulation as a proper substitute in cases of fever for ordinary food. Milk is the normal food of most persons in acute disease, and there are very few persons, even in severe fevers, who cannot receive it to the full extent of their powers of assimilation. To give brandy and beef-tea every hour or half-hour, and to continue this practice for days and nights together, even wakening up the patient in order to give him his food and stimulant, is the surest of all ways to destroy whatever remains of natural appetite. The proper use of alcoholic stimulants is to quicken and develope the appetite for real food, and the power of assimilating it. The proper and normal time therefore for giving these stimulants in fever, is along with the food. There are doubtless many cases of fever which are benefitted by them, but this is by no means the rule. (Dr. W. T. Gairdner, p. 1.)

CANCER.—The author recommends highly the use of arsenious acid as a caustic for the removal of cancerous tumours. He uses the following formula : Arsenious acid, ʒij., mucilage of gum acacia, ʒj., well mixed together and made into a thick paste. No tumour more than four square inches in superficies should be treated on this plan. The paste is to be spread on a piece of lint an inch square, and applied over the tumour. In the course of twenty-four hours the surrounding parts will commence to swell, become red, and to a certain extent inflamed, but the pain caused is by no means severe. At the end of forty-eight hours to three days bread poultices are to applied. A line of demarcation is soon seen extending round the mass, which separates gradually from the surrounding healthy tissues and comes away entire, leaving a healthy cuplike depression. On the removal of the first piece of lint it is in most cases desirable to repeat the application of the

caustic, even several times, according to the size of the tumour. The value of the arsenious acid depends on its power of selection; for if put on with ordinary care the cancer alone is attacked. (Dr. A. Marsden, p. 40.)

Goitre.—*Hypodermic Injection of Iodine.*—The author treats goitre by hypodermic injections of iodine. He began with four or five drops of the tincture and gradually increased the quantity, repeating the injections every eight days or so. (Prof. A. Lucke, p. 325.)

Rheumatic Fever.—Rheumatic fever on an average only lasts seventeen days when it is treated by mint water. This is quite as favourable a result as follows the exhibition of alkalies, or the employment of blisters. (Drs. Gull and Sutton, p. 16.)

In rheumatic fever the tendency is for the heart to become diseased during the first few days of the fever; and should it escape the early days of the disease, there is each day a lessening tendency to its implication. (Dr. Gull, p. 18.)

In the commencement of a case of acute rheumatism great and immediate benefit is often derived from the administration of aconite. The inflammatory process ceases, the skin cools, and the pulse decreases in frequency. It should be given in doses of two drops of the tincture every three hours. (Dr. S. Wilks, p. 32.)

The Alkaline Treatment.—The alkaline treatment of rheumatism has this great advantage, that the per centage of cases in which the heart becomes affected is only 1 in 48, whilst under non-alkaline treatment it is 1 in 4. The conclusion is arrived at from a careful observation of 158 cases, 48 of which were treated by alkalies, and 110 by other plans of treatment. It was observed that under alkalies the duration of the disease was shorter than under most other plans, a point, however, of little importance as compared with the safety of the heart. In the beginning of the disease when there is a rapid production of acid, the alkalies should be given freely, and, above all, frequently, but towards the end of the case they should be given in less quantities. The urine is the best guide as to the doses of alkali to be given. Perhaps a simple solution of citrate of potass in water is as effective and as little objectionable as anything. This salt may be given in the general quantity of about an ounce in the twenty-four hours; rather more at the beginning of the disease, less towards the close. (Dr. W. H. Dickinson, p. 34.)

Unless "the alkaline treatment" of rheumatism is properly understood failure and even mischief will result from attempt-

ing it. The urine is to be rendered alkaline within twenty four hours, and for this purpose from an ounce and half to two ounces of an alkaline carbonate must be given in that period, dissolved in a considerable quantity of water. Two drachms may be ordered to be taken in effervescence every three or four hours, in combination with an ounce of lemon-juice, or with half a drachm of citric acid. The amount of alkali must be rapidly diminished during the next three days, then if the urine still remains alkaline, a cinchona draught three times a day must be substituted for the alkali: with the bark scruple doses of bicarbonate of potash may be given if thought desirable. The bowels should be unloaded early in the case. No solid food should be allowed, and wine and spirits forbidden. (Dr. H. W. Fuller, p. 19.)

The reason why in some hands the alkaline treatment fails is that the doses given are too small, and time is lost. Half an ounce of acetate with half a drachm of nitrate of potash as a maximum dose, given every two hours until nausea is produced, or until the sweat ceases to redden litmus, will usually relieve the pain in twelve hours. (Mr. A. Fleischmann, p. 359.)

Scarlet Fever.—If scarlet fever appears in a family, let the patient or patients be washed all over once or twice a day with diluted carbolic acid. This will always prevent the spread of the disease to the other members of the family. It should be used of the strength of one drachm to the pint of water. (Mr. A. Beardsley, p. 13.)

If chlorine gas be properly used in the sick-room of the patient, the contagion of scarlet fever will be confined to that room. Direct large coarse towels to be saturated with a solution of chloride of lime, and hung over the backs of chairs, and a sheet to be hung in front of the bed-room door. We may judge of the quantity required for disinfecting the room by smell and taste on going into it. This process should be continued throughout the course of the fever. (Dr. P. Hood, p. 11.)

The stomach having been relieved by vomiting, whether by the operation of nature or art, and the liver and bowels also by the administration of an efficient dose of medicine, *quinine* is our sheet-anchor. This drug is as powerful in destroying the scarlatinal germ as it is potent in the cure of ague. It should be given in doses of a grain and a half, to a child eight years of age, with a few drops of sulphuric acid and syrup of orange peel, in water. The dose may be repeated about every six hours. The pulse will be found to diminish

in frequency, and the soreness of throat and difficulty of swallowing to be scarcely complained of. In the worst forms of the disease, iron should be combined with the quinine. When this treatment is pursued, it is necessary that strict attention should be paid to procuring a daily alvine evacuation. (Dr. P. Hood, p. 10.)

Digitalis.—For some years it has been the custom of the author to prescribe digitalis in cases of scarlet fever, combining it usually with nitric ether and nitrate of potash. It controls vascular action and lowers the frequency of the pulse. One drop of the tincture every three or four hours should be given to a child a month old, though as much as five drops is tolerated. (Dr. S. Fennell, p. 14.)

Carbolic Acid in Scarlatina, Measles, and Small-pox.—The author has given carbolic acid internally in six hundred cases of the above-named diseases. He usually gives a tablespoonful of the following mixture every four hours, until the fever, &c., has subsided. Carbolic acid and acetic acid, of each one drachm to one drachm and a half; tincture of opium, one drachm; chloric ether, one drachm; water, to eight ounces. It produces profuse perspiration, and rapidly lowers the pulse, so much so, that in twenty-four hours, it will fall from 120 to 60; skin cool and moist, with subsidence of fever. (Dr. A. Keith, p. 15.)

Scurvy.—Sea-scurvy is not owing to a deficiency of potash in the food, but is caused by mal-nutrition owing to the indigestible character of the food. Salt meat and dry biscuit will remain undigested for five or six hours, hence the digestive powers become exhausted, and the gastric juice deficient in quality. Lemon juice, lime juice, wines, all kinds of vegetables, act as anti-scorbutics, as does nearly every nameable article of diet, but this is on account of the variety of food. The acid fluids, such as lime and lemon juice, also act by assisting the digestion of the fibrine of meat. The great desideratum should be that the sailor should be provided with good flesh-food; and since salt meat must of necessity always form the basis of his dietary, every care should be taken that it be of recent pickle, bad salt-meat being too commonly the cause of the disorder. (Dr. A. Farr, p. 37.)

Struma.—*Peroxide of Hydrogen.*—The author has administered peroxide of hydrogen in various diseases, such as diabetes, rheumatism, cardiac diseases, and struma. The results in the two cases of struma related were encouraging. In both cases there was great enlargement of the cervical glands, and in both, the swelling rapidly disappeared. A third case had suppurating

glands in the neck, and purulent discharge from abscesses in six other parts of the body. This case, also, rapidly recovered. (Dr. B. W. Richardson, p. 335.)

AFFECTIONS OF THE NERVOUS SYSTEM.

CHOREA.—The red oxide of iron is one of our best remedies in chorea. It was first given by Dr. Elliotson many years ago, and he acquired great fame by his success. An equally favourite remedy at Guy's Hospital is sulphate of zinc, beginning with grain doses, and increasing gradually. A favourite remedy of the late Dr. Hughes was rhubarb steeped in port wine; the children were thus well kept up at the same time that the stomach and bowels were improved in condition. (Dr. S. Wilks, p. 76.)

Indian Hemp.—Indian hemp has a peculiar value and power in controlling the irregular movements of chorea. Small doses frequently repeated are more suitable than larger ones at longer intervals. Six minims every hour was given in the case of a child thirteen years of age. (Dr. Douglas, p. 79.)

CRUVEILHIER'S PARALYSIS.—*Electricity.*—Cruveilhier's paralysis is only another name for "progressive muscular atrophy" and "wasting palsy." It occurs always in the muscles of the upper extremity. It may be diagnosed from paralysis produced by lead in the system by the fact that in the latter the muscles do not respond to the stimulus of electricity, whereas in progressive muscular atrophy they do. There can be no doubt that the best and perhaps only treatment for this disease is electricity. Remak's method, although quite empirical, is perhaps the best. This consists in the employment of a "constant" battery, having 100 cells, of which a variable number are used according to circumstances. The positive pole is applied to the back of the head or neck, the other or negative pole is placed over the spine, below the fifth cervical vertebra. (Dr. C. H. Fagge, p. 86.)

INSOMNIA.—If sleeplessness arises from pain, opium is our remedy; if, however, from mental rather than from physical pain, or from trifling causes exciting a morbidly sensitive nervous system, bromide of potassium or ammonium is more appropriate. In the latter class of cases opium will frequently aggravate the insomnolency. To adults a dose of thirty grains of bromide should be given a quarter of an hour before the last meal, and a second dose of from twenty to fifty at bed-time. In cases in which, without any nervous

complaint, there is sleeplessness owing to some cause of cerebral excitement, sleep is almost always induced by that remedy. (Dr. J. Turnbull, p. 57.)

MIGRAINE AND CLAVUS HYSTERICUS.—*Muriate of Ammonia.*—Migraine is one-sided headache, which if it lasts long enough ends in vomiting. Both this affection and clavus hystericus are primary neuralgias of the fifth cranial nerve. Salts of ammonia, as being diffusible stimuli, naturally suggest themselves as likely to cut short attacks of these kinds. The muriate of ammonia in doses of ten to twenty grains is very effective, and if given early enough seldom fails to cut short or greatly mitigate an attack. (Dr. Anstie, p. 51.)

MYALGIA.—*Muriate of Ammonia.*—The general type of cases of myalgia (so named by Dr. Inman of Liverpool) is that of aching pains felt in muscles which are habitually overworked in proportion to their nutrition; such pains are naturally commonest in laborious and ill-fed persons. Theoretically rest is the one all-paramount indication of treatment; but practically this is often found to be impossible. Dr. Anstie, from whose paper these remarks are abstracted, observes of the action of muriate of ammonia in these cases, "I give it in doses varying from ten to twenty grains, and can say that not even quinine in ague is a more reliable agent than the muriate in myalgia." (Dr. F. E. Anstie, p. 50.)

NEURALGIA.—*Sulphate of Nickel.*—A case of obstinate neuralgia is related which was cured by sulphate of nickel in doses of half a grain, three times a day. At the end of a week, a dose of one grain was given. "Its sedative action was speedily manifested in reducing the pulse and procuring sleep. All symptoms of the paroxysm disappeared." The remedy seems worth a trial. (p. 64.)

Intercostal Neuralgia.—Intercostal neuralgias and myalgias which are so common in suckling women, are generally much benefitted by the administration of muriate of ammonia. (Dr. F. E. Anstie, p. 52.)

Neuralgias of the Viscera.—There can be no doubt that neuralgia attacks internal organs—such as the heart, the liver, the stomach, and the ovary. Hepatic neuralgia is not uncommon. The pain complained of is severe and intermittent, and unaccompanied with symptoms indicating inflammatory action or any organic change. Nothing is more obstinate than such a case. Quinine and arsenic are useless, or even ill-borne. But here the muriate of ammonia, in ten or fifteen grain doses acts "like a charm," cutting short the attack promptly, and also seeming to dissipate the tendency to neuralgia. (Dr. Anstie, p. 53.)

Facial Neuralgia.—Spasmodic or "Epileptiform."—There is a form of facial neuralgia, which, when it occurs, does so in persons past the prime of life. It is characterised by intense severity in its onset, which is also sudden. It is to some extent hereditary. Our best treatment consists in: 1. The use of counter-irritation of a peculiar kind. 2. Nutritive tonics. 3. Subcutaneous injection of morphia, or of atropia according to circumstances. The counter-irritation must not be applied to the branches of the fifth nerve, but to those of the occipital nerve. A blister at the nape of the neck is often strikingly effective in gaining a short respite. The assiduous use of cod-liver oil, or of some fatty substitute for it, should be insisted on from the first, and is of the highest consequence. (Dr. F. E. Anstie, p. 70.)

Pain in the Pelvic Viscera.—Belladonna is incomparably the best of all medicinal remedies for every kind of pain in the pelvic viscera, nothing can approach it in this respect. (Dr. Anstie, p. 130.)

Stomachal Epilepsy.—*Brucine.*—Brucine is a tonic of great value in cases of epilepsy. Convulsion is an impossibility in a perfectly healthy brain and nervous system. It should be given in a solution made of the same strength as the liquor strychniæ of the Pharmacopœia, of which ten minims twice daily is a commencing dose. Every third day an addition should be made of five minims to the dose until from a third to half a grain is reached. The action of brucine is very similar to that of strychnine, but it is preferable in these cases. No benefit must be expected until a full dose is reached. The administration of brucine need not interfere with our using the bromides in suitable cases. (Dr. J. S. Ramskill, p. 73.)

Strychnia Poisoning.—*Calabar Bean.*—A case of strychnia poisoning is reported in which, after half-an-ounce of the tincture of calabar bean had been given in small and repeated doses, the report was: "The pulse then became extremely weak, the spasms almost ceased, but the woman could hardly speak or swallow." She gradually recovered from this state of depression. (Dr. J. W. Keyworth, p. 85.)

Subcutaneous Injection of Morphia.—When the patient is tetanic and unable to swallow anything, face congested and livid from the violence of the spasms, and the consequent asphyxia, remedies administered by the stomach are out of the question, and chloroform is of doubtful efficacy. In such cases inject a third of a grain of morphia subcutaneously, and repeat it if necessary, in three-quarters of an hour, and again in two

hours more. A most interesting case illustrating the satisfactory results of this plan of treatment, is related in the article from which this note is taken. (Dr. C. Puzey, p. 341.)

Tetanus.—*Calabar Bean.*—Calabar bean continues to be found efficacious in the treatment of tetanus. Its exhibition should be commenced early, so as to give it time to act before the disease has become matured. Cases are related by Mr. W. Alexander (p. 79), Dr. Eben. Watson (p. 82), and Dr. Macarthur (p. 363).

Bromide of Potassium.—A case of tetanus is also related by Mr. Brown, which was treated by bromide of potassium, given in doses of twenty grains every hour. It terminated favourably, but it is difficult to judge of the value of a remedy from one case. (p. 361.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

Bloodvessels.—*Action of the Sympathetic Nerve on.*—The attention of physiologists is being much directed to the action of the sympathetic on the bloodvessels. Dilatation of the vessels and increased temperature, or diminution of temperature, with final atrophy, are now well known to result from experiments made on these nerves. (Dr. S. Wilks, p. 28.)

Epistaxis.—*Perchloride of Iron Spray.*—In desperate cases where plugging has not arrested the hemorrhage, or when that remedy is not thought desirable, try the plan of blowing up the nostril the spray of tincture of perchloride of iron. If it is desirable that it should pass backwards further than the soft palate, the opposite nostril and the mouth must be kept firmly closed during the operation. (Mr. W. M. Banks and Dr. Cregeen, p. 202.)

Inflammation.—*Opium.*—Opium is the most important anti-inflammatory remedy at present known. It never could have maintained its position as a medicine in all forms of inflammation, unless this had been its true nature. Its effects are most striking in the various forms of inflammation of the abdomen and chest. How a sore throat or bad cold can be at once checked by a Dover's powder, or dose of laudanum, is in every one's experience. (Dr. S. Wilks, p. 29.)

Aconite.—The power of aconite over inflammation is little less than marvellous, especially in the early stages. It can sometimes at once cut short the inflammation. As might be expected, the results of aconite are most apparent when the inflammation is not extensive, or not very severe, as in the catarrh of children, or in tonsillitis, or in acute sore throat.

The chief symptoms produced are moisture of the skin, and lowering of the temperature, and of the frequency of the pulse. Half-a-drop of the tincture, or a drop, in a teaspoonful of water, should be given every ten minutes or a quarter of an hour, for two hours, and afterwards be continued every hour. If there be much prostration, a still smaller dose should be given. (Dr. S. Ringer, p. 338.)

Popliteal Aneurism.—There is no simpler and more effectual way of curing this disease than the following:—Confine the patient to bed with the knee on a pillow, and moderately bent, and let him take half-a-drachm to a drachm of iodide of potassium daily. By some such means as Carte's circular compressor, with the screw pad removed, suspend over the artery in the femoral space a weight of about twelve lbs. This may be a long circular bag containing shot, and the artery is to be compressed by the lower end of the bag. The lower extremity of the weight should be a curve of the form of the larger end of an egg turned from a mass of lead $3\frac{1}{2}$ inches in its transverse diameter. If more pointed it becomes intolerable. If the circulation in the artery is kept completely arrested for twenty-four hours, which it may readily be by constantly watching the weight day and night, and judging of its compressing effects by the hand placed on the tumour, the sac will be found to have solidified. It will be well, however, to maintain the pressure for twenty-four hours longer. (Dr. P. Heron Watson, Edinburgh Medical Journal, May 1869, p. 961.)

Torsion of Arteries.—When torsion of a large artery is properly done the internal and middle coats give way and retract in the direction opposed to the blood stream, approximate and overlap, and occasionally the ends become actually incurved. The twist of the external coat remains permanent. If this experiment be done on an artery just removed from an animal it will be found that water cannot be forced through the obstruction by means of a syringe acting in the direction of the blood stream. This shows, as also do direct experiments on the carotid of the horse, that torsion is applicable to arteries of the largest size. The extremity of the artery held by the forceps should not be twisted off, the occlusion of the artery is then much less secure. (Mr. T. Bryant, p. 153.)

The author has for some time used torsion exclusively in large operations—in amputations of the thigh, twisting the femoral as well as other arteries. The wounds were closed by sutures, and there was no after-hemorrhage in any of the cases. The plan pursued has been to twist the end of the

vessel until it fairly comes off. Care must be taken that the end is not pulled off, it must be twisted off. (Dr. G. M. Humphry, p. 162.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

Asthma.—*Belladonna.*—Belladonna is one of the most efficient remedies for asthma. But there are certain points to be observed in its administration. The tincture is the best preparation, and it must be given only once a day, viz., at night. The object of this is to bring the full force of the drug to bear upon the disease at the time at which it is most liable to come on, and moreover a larger dose can be given than when it is oftener repeated. Ten minims is the commencing dose, and it must be gradually increased up to twenty, thirty, or forty minims, as necessary. It has hitherto not been prescribed in sufficient doses, and this accounts for its failure in the hands of many who have tried it. (Dr. H. Salter, p. 112.)

Spasmodic Asthma of Children.—Bromide of potassium in six grain doses in syrup every two hours is worth a trial in this affection. (Dr. W. Begbie, M. Sondahl, p. 116.)

Chronic Catarrh.—Give five minim doses of tincture of aconite every four hours. Opium has a similar action in such cases. (Dr. S. Wilks, p. 33.)

Impacted Foreign Bodies in the Nose.—Wash the foreign body out from behind by inserting the nozzle of a Higginson's syringe, or of Thudichum's apparatus, into the opposite nostril, and causing a stream of water to flow *out* of the nostril containing the foreign body. (Mr. W. M. Banks, p. 375.)

Ozæna.—*Carbolic Acid.*—Perhaps carbolic acid is the best deodorant in cases of ozæna, certainly one of the best. A solution of this can easily be run through the nostril by means of a piece of elastic tubing, having a perforated weight at one end and a nozzle to accurately fit the nostril at the other. This must be used as a syphon, the vessel containing the solution being placed on something above the elevation of the patient's head. It will now be found that if the nozzle be placed in the nostril which is unaffected, and the stream allowed to flow, at first gently, that it will cause the soft palate to rise upwards and completely shut off the nasal from the pharyngeal cavity. The course of the stream will be round the septum and out at the diseased nostril, which is thus thoroughly cleansed and disinfected. It is well to use tepid salt and water occasionally as well as carbolic acid. (Mr. W. M. Banks, p. 200.)

PHTHISIS.—*Ether and Etherised Cod-Liver Oil.*—It was found by M. Claude Bernard that ether introduced into the stomach of an animal determines soon afterwards a considerable flow of pancreatic juice. The author proposes to take advantage of this in the treatment of phthisis, for the effect of the ether is to cause turgescence of the pancreas and of the intestinal glands, exactly as occurs in a healthy person during the digestion of food, so that we may hope to stimulate the glands to renew their healthy action. Pure ether of the Pharmacopœia should be used, and may be given in twenty minim doses mixed with two drachms of cod-liver oil three times a day. The ether very much disguises the taste of the oil. (Dr. B. W. Forster, p. 106.)

TRACHEOTOMY TUBES.—The tracheotomy tubes usually constructed are not sufficiently long to reach the trachea easily in the living subject, and the consequence is that they occasionally slip out during the act of coughing or swallowing, and if the surgeon is not at hand, death may ensue. The tubes should be made half as long again as those ordinarily employed. The two blades of the outer canula should be made so that they lie in close apposition at their distal extremities, and are separated only by the introduction between them of the inner canula. The introduction of the canula though the slit in the trachea is much facilitated by this plan. (Mr. T. R. Jessop, p. 212.)

Mr. Durham, of Guy's Hospital, has invented a form of tracheotomy tube which certainly may be considered an improvement on those in general use. The collar is movable, and can be fixed at any point of the straight part of the outer tube. The portion of the tube in the wound may thus be regulated in length according to the depth at which the trachea is situated. The inner tube is longer than the outer one, and the terminal or curved portion consists of several small pieces jointed together, somewhat in "lobster-tail" fashion. This is necessary in order to enable the tube to pass along the straight portion of the outer tube and then to curve downwards, and fit into the perpendicular portion. In order to facilitate the introduction of the outer tube it is mounted on a blunt-pointed pilot trocar, which is withdrawn when the tube is introduced. (Mr. A. E. Durham, p. 204.)

AFFECTIONS OF THE DIGESTIVE SYSTEM.

CLEFT PALATE.—*Instrument for facilitating the Operation of Staphyloraphy.*—The desirability of performing the operation for cleft palate at an earlier age than has hitherto been done

cannot be denied. The author has invented an instrument by which the patient is rendered perfectly helpless, the tongue being depressed and the mouth held wide open. By this means, and by the aid of chloroform, the defective formation may be remedied early in life, before the indistinct and nasal habit of speaking becomes permanently acquired. The same instrument will be found useful in excision of the tonsils in unruly children, and in operations on the pharynx and interior of the mouth. (Mr. T. Smith, p. 221.)

Hare-Lip.—Cases of hare-lip ought to be operated upon within the first month; nothing is gained by waiting. If this is not done the child fails to take sufficient food, and becomes emaciated and unfit for the operation. The best position for the operator is sitting, the head of the child being held between the knees, while the rest of the body is supported by an assistant. Use a narrow scalpel, with which transfix above and cut downwards in a curved direction, that when the two curved surfaces are brought together the full edge of the lip may be thrown sufficiently down. If the alveolar process is cleft and prominent it should now be snipt through at the spot between the lateral incisor tooth and the canine, and pushed back. Having done this the lip and all the surrounding parts, including the nose, must be separated from the deeper parts, so that the lip may hang loosely, without any tension. If this is not well done there will be failure in the union. The raw edges of the wound must now be adjusted, commencing the adaptation at the lowest part. The sutures and pins are generally removed too early. (Mr. H. Walton, p. 219.)

New Operation for.—The author describes a new operation for the remedy of this deformity. The peculiar object of this operation is the preservation of the natural curves of the lip. The upper lip may be divided into a central and two lateral portions, divided by curved lines running from the nostril to the margin of the lip. The fissures of hare-lip always correspond to this division, and the cicatrices should also do so. (Dr. M. H. Collis, p. 213.)

Habitual Constipation.—In habitual constipation, ten or even five minims of tincture of colocynth in a little water an hour before breakfast generally suffices to ensure a full evacuation, without much inconvenience, or the dose requiring to be increased. It is much superior to the crude colocynth. (Dr. R. W. Crighton, p. 331.)

Hemorrhoids.—*Use of the Ether-Spray in Operations on.*—A strictly external pile may be painlessly removed by freezing

with ether-spray and then cutting it away with the scissors. When the hemorrhoids are close to the anus and extremely painful, it is an excellent plan to freeze them by the ether-spray and then remove them by the knife. It sometimes suffices to freeze them only, great relief being obtained and withering of them may follow without any operation whatever. When the mass is larger, and involving not only the external but also some of the internal veins, the whole mass having been moderately extruded, should be completely frozen. Long hare-lip pins should then be run through the base, and ligatures twisted round the mass sufficiently tightly to restrain hemorrhage but not to produce strangulation. The frozen piles may then be removed by the scalpel or scissors, the patient scarcely feeling the incisions. In twenty-four hours the needles and ligatures can be removed. Hemorrhoids strictly internal are best treated by acids or the cautery. (Mr H. Coote, p. 230.)

Strangulated Hernia.—*Opening the Sac.*—The sac of a strangulated hernia is nearly always opened at St. George's Hospital. One reason for this is, that the fluid contents of the sac (if this be not opened) are returned together with the intestine into the abdomen. These contents consist often of lymph, blood, and serum, in which various alterations are taking place. (Mr. H. Lee, p. 229.)

Coffee in Strangulated Hernia.—In the Havana, coffee has from time immemorial been employed for the reduction of hernias. It is to be used thus :—Add half a pound of powdered roasted coffee to twelve cupfuls of boiling water, and of this let a cup be taken every quarter of an hour till eight cups are taken, after which half an hour should elapse between each dose. Spontaneous reduction of the hernia will generally take place before the coffee is finished. (Dr. Marchand, M. Durand, p. 228.)

AFFECTIONS OF THE URINARY ORGANS.

Diabetes.—*Peroxide of Hydrogen.*—Opinions differ as to the efficacy of peroxide of hydrogen in diabetes. A case is related in which under its use for two months the urine fell from eleven pints in the twenty-four hours to five, and the specific gravity from 1045 to 1024. (Dr. W. H. Day, p. 126.)

The author reports that he has tried both the aqueous and etherial solution of peroxide of hydrogen in diabetes, but has not been able to perceive that the slightest benefit has been produced. He tried ozonic ether in another case and reports that "there was no marked effect either one way or the other observable upon the urine." (Dr. F. W. Pavy, p. 123.)

Excess of Urea in the Urine in Cases of Nervousness and Dyspepsia.—Cases not uncommonly occur in which the symptoms complained of are nervousness and depression of spirits, indisposition for exertion, whether mental or bodily, and dyspepsia, with irregularity of the bowels, acidity of stomach, and excessive flatus. In these cases, if nitric acid be added to the urine, to about one third of its amount, and the tube containing it be put aside for twenty minutes or half-an-hour, it will generally be found to become semi-solid from crystallized nitrate of urea. The disease is temporary, but is very liable to recur, is almost always in males, and is in some way associated or allied with gout. (Dr. H. W. Fuller, p. 116.)

Scarlatinal Albuminuria.—After scarlet fever, the access of inflammation of the kidneys is indicated at once by a rise in the temperature of the body. The friends should be directed to observe the temperature of the body night and morning; and if this should rise beyond the limits of health, they should at once commence the administration of aconite in doses of half a drop to a drop of the tincture every quarter of an hour for the first two hours, and then every hour. The disease may thus be at once cut short. (Dr. S. Ringer, p. 340.)

Stricture of the Urethra.—*Bougies with Bulbous Points.*—Bougies having constricted necks terminating in a bulbous point are of great value in the treatment of stricture. The flexibility of the constricted neck facilitates their adaptation to the urethral curves, and the conical shape of the shaft promotes the process of dilatation. (Dr. F. J. Bumstead, p. 232.)

Filiform Bougies.—"Filiform bougies" the point of which is even smaller than one-third of a millimetre in diameter, (No. 1 of the Franch scale) are indispensable in the treatment of tight stricture. The surgeon provided only with the ordinary instrument will find many strictures "impassable," which can readily be passed with smaller instruments, and in cases of retention of urine, will be tempted to resort to puncture of the bladder. (Dr. F. J. Bumstead, p. 233.)

Holt's Dilator.—Holt's dilator has a great defect in this, that the point is so large that considerable dilatation is often necessary before it can be brought to bear on the stricture. To obviate this, it is recommended that the point should be made separate, so that it can be unscrewed, and in its place a filiform bougie attached. By this plan the instrument may, with a little time and patience, be inserted to the requisite extent in any case of stricture which is at all passable, and at a single sitting. (Dr. F. J. Bumstead, p. 234.)

Spasmodic Stricture.—Spasmodic stricture sometimes very closely resembles organic stricture in its symptoms. It is, however, only by want of care that errors in diagnosis can arise. Cases occur in which all the symptoms of stricture endure for years, but in which, nevertheless, there is clear evidence to show that it entirely depends, on muscular contraction, unattended either by inflammation or congestion. In these cases it will be noticed that the gentlest introduction of an instrument causes acute pain, that the point is arrested at a variable distance, that sometimes to the patient's astonishment he is able to pass urine in a full stream, and that the state of the stricture varies with his general health. Chloroform is sometimes of great use both in the diagnosis and treatment of spasmodic stricture. Opium administered by the rectum, and belladonna locally applied, are sometimes useful, but especially the former. Rest, recumbency, and warmth, in the form of baths, are necessary. But in all these cases we must ascertain as far as possible, the cause of the affection and modify our treatment accordingly. (Mr. W. S. Savory, p. 238.)

Stricture and Irritable Bladder.—Belladonna is of great service as a local application to strictures of the urethra. It has a decided effect on cicatrices and growths of a fibrous character resembling them. A cicatrix becomes softer and more like the healthy skin around it, under the constant and continued application of belladonna. It may readily be applied to strictures by means of the oleum Theobroma as a vehicle. Two grains of the extract may be used in this way twice a day, in conjunction with the regular introduction of the metallic bougie in gradually increasing sizes. (Mr. R. Harrison, p. 128.)

DISEASES OF BONES AND JOINTS—FRACTURES, DISLOCATIONS, ETC.

Compound Fractures.—*Antiseptic Treatment.*—The advantages of healing by scabbing are very great. For this purpose it is necessary that the deeper layers of the dressing should be left to form the scab, and while the antiseptic is renewed from time to time externally, it should not penetrate to the surface of the wound. Cover the wound with two or three thicknesses of lint soaked in carbolic acid in oil, and cover these with a piece of oil silk. The lint consolidates into a crust or scab by the action of the acid on the blood which soaks into the lint. The whole should then be covered with the antiseptic putty, which may be changed daily or once in two days, without disturbing the lint. It is very important that the putty

should overlap the permanent dressing well on all sides. (Prof. Lister, p. 142.)

Carbolic acid can be mixed with shell-lac in any amount by the aid of heat, and the result when cooled varies according to the quantity of the acid, from brittleness to fluidity, the intermediate proportion giving a firm but flexible solid, with considerable elasticity. The lac thus associated with carbolic acid retains it with great tenacity, so that a thin layer spread on calico forms an application which retains its virtues for days, at the temperature of the body, and at the same time does not irritate the skin. This substance forms an admirable substitute for the lint recommended for the formation of a scab in the treatment of compound fracture. The adhesiveness to the skin, which is its virtue in this case, is in other cases undesirable; this may be obviated by brushing it over lightly on the under surface with a weak solution of gutta percha in bisulphide of carbon. (Prof. Lister, p. 143.)

Fracture of the Leg.—The back-splint should be very slightly curved for the calf of the leg, $3\frac{1}{2}$ inches wide at the widest part, and two and a half at the ankle. There ought to be a hole for the heel, that sloughing of that part may not be caused by pressure. One of the worst results from fracture of the leg is inversion or eversion of the foot, so that the patient walks on the side of the foot instead of on the flat of it. Another unfortunate result is rotation of the foot outwards, so that the patient afterwards walks with the toes rotated outwards instead of forwards. These accidents are easily avoidable by having a foot-piece, nearly at right angles with the back-piece. To this the foot must be firmly bandaged, taking care that the three balls of the sole of the foot are all equally pressed against it. The back-piece is to be made of iron, and must have two short transverse bars projecting from its sides, and looped, to receive the slings. A cradle, two flat wooden side-splints, and pads stuffed with tow, complete the apparatus required. There should be no bandages surrounding the limb, so as to obscure our view of it, and moreover they are liable to cause œdema. (Prof. Paget, p. 188.)

Ligature of Arteries on the Antiseptic System.—When catgut is kept steeped in a mixture of oil and carbolic acid, holding in solution a small quantity of water such as the acid enables the oil to dissolve, it becomes completely antiseptic, and when employed as a ligature to an artery may be safely left in the wound, the ends being cut off close. A simple solution of carbolic acid in oil will not do, for the gut remains quite rigid, the oil not entering at all into its substance, nor will a solution of acid in water answer the purpose, for the gut

swells too much and becomes weakened. A vessel tied by this antiseptic ligature becomes permanently occluded by the internal and middle coats becoming blended together. But a most wonderful thing happens to the bit of ligature—it becomes an organised and living structure, continuous with the external coat of the artery. (Prof. Lister, p. 131.)

Partial Anchylosis.—If it cannot be determined that complete anchylosis has taken place, or whether the adhesions are fibrous, and if fibrous, whether they will yield to gradual extension or not, give chloroform, and these points can at once be satisfactorily determined. In cases of partial or fibrous anchylosis it is better to commence the treatment by dividing the tendons of rigid muscles, and by dividing subcutaneously cicatrices. Partial displacement of the articular surfaces is easily produced by continued extension without tenotomy. The tendons having been divided, if any displacement of the surfaces exist it must be remedied, and then gradual extension made by a properly fitting instrument. Numberless cases, however, exist in which the adhesions are so firm that they do not yield to gradual extension ; in these chloroform must be given and the adhesions ruptured. The force applied for the purpose of rupturing adhesions must be applied in the direction of flexion, and the adhesions must be ruptured instantaneously. (Mr. B. E. Brodhurst, p. 172.)

Reduction of Old Dislocations.—Provided manipulations are employed in cases of old standing dislocations instead of the pulleys and physical force, reduction may be successfully accomplished at almost indefinite periods from the accident. If there is no attempt at repair of the injury in the new situation, and the limb is useless and painful, we are bound to attempt reduction. Chloroform is to be fully given, and then the head of the bone loosened from its attachments by moving and rotating it. Before this is done, in some cases it is well to divide any tendons which may be in the way of reduction. This is to be done subcutaneously and the punctures allowed to heal before the reduction is attempted. (Mr. B. E. Brodhurst, p. 178.)

Reproduction of Bone from Periosteum in Resection of Joints.—Experiments made by M. Ollier, of Lyons, conclusively establish the power of periosteum to reproduce bone. These experiments are of great importance as bearing on resection of joints. (p. 180.)

When the elbow-joint is excised, the bones only being removed, and the periosteum left entire, it is a most singular and startling fact that reproduction of the bone takes place,

the form of the original bone being preserved. A case is related in which both the condyles of the humerus and the olecranon process were reproduced. There was a regular joint, surrounded by a capsule and containing hyaline cartilage. The details of the operation are described. (Mr. T. Holmes, p. 175.)

Sprains.—*Compression.*—Plunge the injured joint, say the ankle, into water as hot as can be borne, and keep it there for at least two hours, maintaining the temperature of the water by fresh quantities of the hot. Then having dried the part strap it carefully with adhesive plaster from the toes to the middle of the calf, as tightly and equally as possible, using long strips an inch wide. Next day the plasters will be found quite loose from the shrinking of the limb, which is now generally almost free from pain. The plasters must be removed and fresh ones applied, and this must be repeated on the next day, and again after an interval of two days. It is seldom necessary to apply them more than this, as the patient is able to use his limb, and is free from pain. (Dr. C. H. Higgins, p. 164.)

Varus.—The treatment of varus should not be delayed beyond one or two months from birth, as lapse of time only increases the difficulty of cure. As the distortion is a compound one, so its removal must be effected by various stages. It is better in every case to divide the three contracted tendons, viz., those of the tibialis anticus and tibialis posticus, and the tendo-Achillis. The tendons of the tibial muscles should be divided first, and the inversion of the foot overcome, before the tendo-Achillis is divided. (Mr. B. E. Brodhurst, p. 195.)

AFFECTIONS OF THE SKIN, ETC.

Arsenic in Skin Diseases.—Arsenic is adapted to the treatment of all chronic diseases of the skin which are neither contagious nor specific, neither strumous nor cancerous. It is therefore necessary in six out of every seven cases of chronic skin disease which we are asked to relieve, and moreover these cases are curable by arsenic, and are absolutely incurable without it. If Fowler's solution is used, five minims should be given three times a day, after meals. It must be clearly understood by the patient that no results are to be expected for some time. If there is no improvement in a month, the dose must be slightly increased, and a slight increase may be made in the dose every three or four weeks, if necessary. If conjunctival inflammation of *both* eyes occurs, the dose may be reduced to four minims, but the

medicine must not be abandoned in a panic. It must be distinctly understood by the patient that the medicine acts slowly, and it may require combination with other treatment, such as aperients, or iron. (Mr. T. Hunt, p. 354.)

Dermalgia.—There are two forms of dermalgia, the hysteric and the rheumatic. By dermalgia is meant an increased sensibility to touch confined to a limited portion of skin. Often the pain is independent of contact with any sensible object. Blisters, the linimentum belladonnæ, and the valerianate of zinc or bromide of ammonium internally, are the most likely means of affording relief. Subcutaneous injection of morphia is sometimes called for. (Dr. H. S. Purdon, p. 63.)

Carbuncle.— "On a very strong impression, I say that carbuncles will spread after cutting in as large a proportion of cases as they will spread in without cutting." If they can be divided in the first three or four days whilst still hard and brawny, it may relieve some measure of the suffering; at a later period the incisions have no influence at all. Although abandoning the plan of crucial incisions of carbuncle, incisions *are* called for, if a portion of integument holds in and retains a slough or a quantity of matter, just the same as in an ordinary abscess. There is no good to be obtained by large feeding or abundant stimulants in ordinary cases of carbuncle; let the patient continue his ordinary mode of living. The importance of cleanliness is very great. Patients with carbuncle must not be shut up in their rooms, they should have plenty of free air. (Mr. J. Paget, p. 264.)

Conversion of Upper Layer of Cuticle into Leather.—The application of a solution of tannin, of the strength of 600 grains to an ounce of water, to the skin, converts the upper layer of the cuticle into leather. It may be applied, according to circumstances, by a layer of lint saturated with the solution, or by means of a brush. The tannin combines chemically with the gelatine of the skin, forming a contracted impermeable layer of tannate of gelatine; it, in short, tans, or converts into leather the superficial layer of the cuticle. This may be made of use in many cases, as in the treatment of skin affections which depend on a local cause. It may also be found useful in checking and preventing unhealthy local sweatings, and in various other affections in which gentle and uniform pressure is required. (Mr. J. Martin, p. 329.)

Erysipelatous Inflammation.—*To apply Nitrate of Silver.*—Unless nitrate of silver is properly applied it is liable to be unsuccessful. The parts should be carefully washed with soap and water, and afterwards with water alone, and then wiped

dry with a soft towel. A concentrated solution of four scruples of the nitrate to four drachms of distilled water is then to be applied two or three times on the inflamed surface and beyond it, on the healthy skin, to the extent of two or three inches. Care must be taken that no part is left untouched. In twelve hours, if any inflamed part be unaffected, the solution must be immediately reapplied. (Mr. J. Higginbottom, p. 258.)

Herpes Zoster.—Mr. Jonathan Hutchinson gives some interesting cases showing that herpes zoster is liable to occur, as a result of the therapeutical administration of arsenic. (p. 262.)

Itch.—Except sulphur is used properly in itch it is productive rather of harm than good. In recent cases we should apply the sulphur freely to the interdigits and wrists only, and apply soothing remedies to the general surface, because the eruption on the general surface is sympathetic, the acari existing only about the hands and wrists. The sulphur is generally used a great deal too strong, one part to sixteen is quite strong enough. It is very commonly the case that the scabies is cured by the use of sulphur, but the secondary eruption is intensified. In such cases it is necessary to abandon all sulphur treatment, to give a bran-bath, and use freely some soothing lotion, and the patient soon gets well. (Dr. T. Fox, p. 259.)

Lipoma Nasi.—In cases of large, overgrown, knobby, purple noses, shave the overgrowth down with the knife until the fibro-cartilages are seen. There is usually very free hemorrhage, which is easily checked by pressure and ice. The wound should be dressed with cerate. A smooth even scar will result, much more sightly than the previous diseased state. (Mr. J. Hulke, p. 352.)

VENEREAL AFFECTIONS.

Chronic Gonorrhœa.—*Glycerine of Tannin.*—The following injection is of great service in cases of gleet and chronic gonorrhœa:—Glycerine of tannin, three ounces; olive oil and mucilage, of each one ounce. If used in the acute stage of the disease it should be diluted with equal parts of mucilage. (Mr. J. D. Hill, p. 271.)

Herpes Zoster, (*sometimes Syphilitic.*) In syphilitic herpes zoster the patches are located exactly as are those of common herpes zoster, and are as clearly under the influence of nerve distribution. But these cases differ from the common herpes zoster in that the eruption is usually on both sides of the

trunk and on other parts of the body. It may also last much longer than common herpes zoster does. (Mr. J. Hutchinson, p. 262.)

AFFECTIONS OF THE EYE AND EAR.

Deafness.—*Politzer's Method of Injecting Air into the Eustachian Tubes.*—During the act of swallowing the tensor palati muscle is put upon the stretch, and opens the Eustachian tube. M. Politzer taking advantage of this instructs the patient to swallow, and during the act forcibly injects air into the nose by means of an india-rubber bag, the opposite nostril to that into which the nozzle of the bag is introduced being firmly closed at the same time. This answers perfectly when there is perfect accord in time between the operator and the patient, sometimes however this is not the case. To meet this objection the author has introduced a modification of the plan, by which the patient injects the air himself. (Dr. J. Brunton, p. 256.)

Lacrymal Obstruction.—*Stricture of the Nasal Duct.*—Dr. Stilling, of Hesse Cassel, has introduced the plan of treating stricture of the nasal duct by internal incision, and the results have so far been very satisfactory. He uses a knife resembling a small tenotome, rounded at the point, with a sharp cutting edge and rounded back, the blade about three-quarters of an inch long, rather wider at the heel than at the point, and inserted into an ivory handle by a steel stem, of such length, that the handle is above the canaliculus when the point rests on the floor of the nose. The resisting structures should be fully divided in three or four directions, until the blade is felt to be free in the duct. (Dr. Stilling, Mr. R. B. Carter, p. 250.)

Orbital Cancer.—After excision of cancer the advantages derivable from the application of chloride of zinc must not be forgotten. Two cases are related of orbital cancer treated by this plan. In the first the disease had not returned after a a period of three years. The chloride of zinc paste was laid on small pieces of lint, and applied to the whole surface of the wounds. (Mr. G. Lawson, p. 254.)

MIDWIFERY, ETC.

Accidental Hemorrhage and Placenta Prævia.—*Diagnosis between.*—The blood in placenta prævia comes directly from the uterine or placental vessels, or both, into the vagina, and is there discharged as blood, leaving coagulations behind

in the vagina; whereas, in accidental hemorrhage, the blood, before being discharged, having to find its way some distance to the os, deposits its fibrine so that coagulation does not occur in the vagina, which is free from clots. (Dr. E. Calthorp, p. 282.)

Antiseptic Sponge Tents.—Cut the sponge when wet into the exact shape and size preferred, and saturate it with gum mucilage in which ten or twelve grains of crystallized carbolic acid has been dissolved, to the ounce of mucilage. The tent should then be wrapped on an awl, with a strong, coarse, well-twisted cord, beginning at the small end and carrying the cord round the sponge with perfect regularity. When dry and the cord has been removed the screw threads should not be smoothed down, as they not only prevent its slipping out, but facilitate its introduction, for if there is a hitch during the introduction the tent may be used as a screw. To introduce it hold the uterus by a hook attached to the posterior lip, and pass the tent up by means of a pair of small straight forceps. (Dr. G. S. Bryant, p. 310.)

Induction of Premature Labour.—Having determined the day for the operation, in the evening pass a No. 8 or 9 elastic bougie into the uterus as far as it will easily slip in and twist the rest of the bougie up into the vagina; this keeps it *in situ*. By next day it will usually be found that some degree of preparatory action has been effected, and if this should merge by the afternoon into active labour the bougie may be withdrawn. In the further progress of the case it is not desirable to leave it to nature unless the pelvis is normal, and the labour has been induced on account of constitutional disease. In other cases it is desirable to accelerate the progress by the use of the caoutchouc dilators. If this plan is not followed the child is liable to be expelled suddenly in the absence of the medical man, and it frequently assumes an unfavourable position or the cord falls through, owing to the excess of liquor amnii generally present, and this in the absence of the attendant is likely to be fatal to the child. (Dr. R. Barnes, p. 276.)

The induction of premature labour by injection of water into the uterus is fraught with extreme danger. Both in this country and abroad several cases of severe shock and of sudden death have been caused by it. (Dr. R. Barnes, p. 275.)

Inflammation of the Breast Simulating Cancer.—There not unfrequently occur cases of inflammation of the breast the diagnosis of which from cancer is extremely difficult. There may be a hard, doubtfully elastic swelling, with retracted nipple, no external sign of inflammation and no

increase of heat. The nipple may be drawn in out of sight. In the diagnosis, a careful inquiry into the history of the case is important, and no opinion should be given until an exploratory puncture has been made. (Mr. T. Bryant, p. 319.)

Intra-Uterine Polypi.—The first thing necessary is of course to dilate the os and cervix uteri, so that the finger may explore the cavity of the womb. This is easily effected at one sitting, and without the fœtor caused by the use of sponge, by means of a number of sea-tangle tents, used as follows: A No. 5 or 6 sea-tangle bougie is cut into pieces a little longer than the uterine cavity, and the ends rounded off and smoothed. The patient having been put into the semi-prone position, and a duck-bill speculum introduced, the anterior lip of the uterus is to be seized with a fine tenaculum and drawn downwards, and the pieces of tangle introduced one after another, so as to pack the cervix uteri with them. No force must be used in introducing them. The tents should not actually touch the fundus of the uterus, but nearly so. The introduction of a number of small tents is much easier than that of one large one, and the dilatation effected is more satisfactory. The polypus may then be seized with a vulsellum ferceps, and the loop of a single wire ecraseur being passed over it, it can easily be removed. It is not at all necessary that the tumour should be cut off close to its uterine attachment. (Dr. G. H. Kidd, p. 291.)

Medicated Pessaries.—Cocoa butter is not a suitable vehicle for drugs intended to be administered in a pessary, for, independently of its causing an unpleasant greasy discharge from the vagina, it prevents the absorptive action of the vaginal walls acting on the drug used. An excellent vehicle is three parts of the soft soap of the B. P. to one part of powdered althea root. Pessaries prepared with this have a pleasant emollient action which is very grateful when anodynes are required. (Dr. A. Meadows, p. 311.)

New Duck-Bill Speculum for Private Practice.—The advantages of Sims's duck-bill speculum are very manifest in all vaginal and uterine operations. The ordinary specula push the uterus away, and are of little service beyond affording an excellent view of the os and lips of the uterus, and of allowing the easy application of caustics or other remedies to these parts. They are of no use in operations on the vagina. There are, however, insuperable objections to Sims's speculum in private practice, such as its unwieldly size, and its requiring an assistant. Dr. Nott, of New York, describes a speculum invented by himself, which combines all the advantages of Sims's, with the portability of other specula. Like Sims's it

admits of the uterus being hooked down to the orifice of the vagina if necessary. It is self-retaining, thus leaving both hands at liberty, and does not require the help of an assistant. It will be best understood by reference to the woodcuts at page 318. (Dr. J. C. Nott, p. 313.)

Ovariotomy.—*The Clamp.*—During the twelve months, ending last October, Mr. S. Wells operated on thirty-six cases of ovariotomy. In thirty of these he used the clamp, *and all recovered;* in the remaining six, other means were employed, and of these cases five died. Of these five, however, two would probably have died whatever mode of arresting hemorrhage from the pedicle had been employed. Still the superiority of the clamp seems sufficiently attested. It was not employed in all the cases, because in some the pedicle was too short. (Mr. T. S. Wells, p. 297.)

Post-Partum Hemorrhage.—In a case of very severe post-partum hemorrhage, in which no contraction whatever of the uterus could be obtained, and it was evident that death would soon ensue, the author pursued the following plan with success: He took a large sponge, and having washed it in cold water, squeezed it as much as possible, and introduced it into the womb; contraction immediately took place round the sponge, and a bandage having been applied over the abdomen the hemorrhage ceased. In about three days it was expelled into the vagina, whence it was withdrawn by a string which had been tied to it previously to its introduction. (Dr. F. E. Wilkinson, p. 283.)

Injection of Perchloride of Iron.—In desperate cases of post-partum hemorrhage, where kneading, compression, ergot, cold in every form, have failed, there is no better plan of treatment than that of injecting the uterus with a solution of perchloride of iron. A very convenient preparation is the liquor ferri perchloridi fortiori of the British Pharmacopœia. Half a pint of this should be diluted with a pint and a half of boiling water and put into a deep small basin. It must be injected into the uterus by means of a syringe and a uterine tube about nine inches long. The author says, "I have hardly ever known any more hemorrhage to occur after one injection." (Dr. R. Barnes, p. 284.)

Prolapsus Uteri.—*Operation.*—A case of prolapsus uteri was lately operated upon successfully at the Middlesex Hospital in this manner: An elliptical piece of the mucous membrane of the vagina about three inches and a half in length by two in breadth, from the vesical wall of the vagina. The cut margins were brought together by means of two silver wire

sutures. Fourteen days afterwards rather more than an inch of the mucous membrane of the posterior and lateral walls of the vagina, including the cutaneous margin of the fourchette, was removed by a horse-shoe shaped incision. The denuded surfaces were brought together by quilled sutures, as in operation for ruptured perineum. (Mr. Norton, p. 290.)

Sickness of Pregnancy.—*Carbolic Acid.*—Give drop-doses of the crystallized carbolic acid, liquefied by heat, and diffused in half an ounce of thin mucilage, three times a day. It will be found to act very satisfactorily, not only in the sickness of pregnancy, but in chronic cases of vomiting unconnected with pregnancy. (Mr. E. Garraway, p. 281.)

Hypodermic Injection of Morphia.—In intractable cases of vomiting of pregnancy inject morphia subcutaneously. A most interesting case illustrating the benefit of this plan of treatment is given. (Mr. J. Harrison, p. 367.)

Uterine Speculum.—*Reflecting Mirror.*—Dr. Sedgwick recommends as an improvement on the uterine speculum, the adaptation to it of a reflecting mirror about three inches and a half in diameter, and of five inches focal length. This is attached to the speculum by a jointed arm. The advantages of this are, the light can be concentrated on the part to be examined without much alteration of the patient's position in in bed, and the illumination obtained is itself better. It was made by Weiss and Son. (Dr. L. J. Sedgwick, p. 357.)

Vesico-Vaginal Fistula.—The author proposes the plan of splitting the edges of the fistulous opening, so as to form two flaps, one vesical and the other vaginal. When the edges are brought together the split edges open out, and apply themselves against each other, giving a wide surface of contact. The edges are to be brought together with quill sutures. It is always necessary that the incision of the margins should pass well through any tough cicatricial tissue and reach sound areolar tissue. (Dr. M. H. Collis, p. 307.)

MISCELLANEA.

Artificial Respiration.—One of the convenient galvanic batteries now made by Stöhrer and others should always be at hand when chloroform is being administered, or at places where death by drowning is liable to occur, in order that a Faradaic current may be at once applied to the phrenic nerves where they pass over the scaleni muscles. There is no more effectual means of procuring artificial respiration than this. (Mr. Carter, p. 347.)

Pacini's Plan of Artificial Respiration.—The following plan of artificial respiration is that of Pacini, of Naples. Place the patient on his back on a table or bed, and let the operator have his abdomen against the head of the patient, and place his hands in the axillæ, on the dorsal aspect, and then pull the shoulders towards him with an upward movement at the same time. The shoulders should then be relaxed, then the former movement, and so on alternately. The air sometimes makes a loud noise when it passes the larynx. (Dr. E. P. Bain, p. 344.)

Disinfection with Carbolic Acid Vapour.—The employment of carbolic acid vapour as a disinfectant is recommended in cholera or fever hospitals. The acid should be placed in a small porcelain dish which is to be floated in a larger vessel of hot water, and the heat of the latter is to be maintained by means of a gas jet, or similar means. (Dr. J. B. Russell, p. 326.)

Improved Syringe-pipe for Hypodermic Injection.—A gold syringe-pipe may with advantage be fitted with a solid steel spear-point. By this means, we avoid the liability to corrode, which is characteristic of steel needles, and at the same time are enabled to pierce the skin with ease. (Dr. T. Buzzard, p. 325.)

Lead Poisoning.—*Sulphates and Iodides.*—The two chief remedies for lead poisoning are the sulphates and iodides. The former render the lead inert, by reducing it to its most insoluble form, and the latter eliminate it after rendering it as soluble as possible. The lead is eliminated as an iodide of lead and potassium, which is very soluble. The sulphates are most suitable for the treatment of acute cases, the iodides for chronic. As good a formula as any for the administration of sulphates is the following: Magnesiæ sulphatis ℥ij., acidi sulphurici diluti ℥x., tinctura hyoscyami ℥xx., aquæ menthæ piperitæ ℥j., ter die. (Dr. E. Clapton, p. 347.)

Snake-Bites.—*Dr. Halford's Remedy.*—Professor Halford's remedy for snake-bites is attracting a good deal of attention in Australia. A solution of ammonia is made of the strength of one part of strongest liquor ammoniæ to two parts of distilled water, and of this an ordinary hypodermic syringeful is injected into a vein. For this purpose an incision must be made through the skin, and the superficial radial vein exposed. The point of the syringe must be introduced through the coats of the vein. This has been tried upon animals, with great success, and once in the human subject. "The beneficial effect was immediate. From an almost pulseless state, and from a stupor verging on death the patient speedily became conscious." (p. 353.)

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

1.—ON THE LIMITS OF ALCOHOLIC STIMULATION IN ACUTE DISEASE.

By Dr. W. T. Gairdner, Professor of Practice of Medicine in the University of Glasgow.

[Dr. Gairdner considers that the assumption has been made unduly, without proof, to the effect that alcohol not only *is* a food in the ordinary sense of the term, but that it is *the only* food that can be relied on to support the system in many states of disease.]

The root of error, as I believe—the opinion mainly responsible for the extreme lengths to which Dr. Todd and others have carried alcoholic stimulation—is to be found in the undue assumption that alcohol is not only a real food (which, hypothetically, I at least do not deny), but that it is *the* food, of all others, which is to be chiefly relied upon for supplying the material of repair in fevers; thus compensating the waste, and averting the functional exhaustion, characteristic of most acute diseases.

This doctrine I firmly believe to be erroneous; and if erroneous, it must not, in the great interests of humanity, be allowed indefinitely to shelter itself under the authority of great names, or to take refuge in the theoretical confusion which may be raised around it, in the present unsettled state of the physiological question. I shall venture, therefore, here to state the opposite doctrine in as precise terms as the nature of the case admits, viz.: that alcohol, *per se* (that is, apart from the other ingredients present in some stimulating liquors), is not in any sense a fitting material to be chiefly relied on for the repair of the textures in fever; that even admitting the doubtful hypothesis that alcohol may under certain circumstances act as a true reparative material, its practical utility in this direction is very strictly and even narrowly circumscribed by the stimulating or medicinal, narcotic, and ultimately poisonous, action which it always exerts upon the nervous system when given in

sufficiently high doses; that in ordinary medical practice we cannot, as a rule, secure any considerable amount of the supposed *feeding* action of alcohol without a certain amount of this medicinal and poisonous action; and that the proper use of the stronger alcoholic liquors in acute disease is, therefore, therapeutic, and not properly dietetic.

Now, in order to bring the issue in the matter before us into the clearest possible shape, I shall maintain, as a doctrine based upon experience, that "alcoholic food," so called, is not only a bad and defective form of nourishment in most cases of fever, but (when used in quantity and continuously) a very positively injurious and disastrous one, inasmuch as it tends invariably, in the high doses prescribed by Dr. Todd and others, to destroy the susceptibility of the system for other and more natural food, to disturb the power of assimilation, to retard the elimination of effete matters from the blood, and by poisoning the nervous system, to render the patient more or less insensible to the natural wants of the exhausted body.

The whole drift of the argument of Dr. Todd's book is, that without such doses of alcohol as he describes it is impossible to pass safely through a fever of considerable intensity. Hence the alcohol (as he remarks elsewhere) must on no account be stopped, even though its use should appear to lead to flushing, or to increased delirium, or to coma; for it is more likely that the dose is too small than too large, and in any case, he remarks, "it is much better to err on the side of over-stimulation than not to give enough" (p. 130). Hence, also, the repeated cautions "against the *morbid* fear of over-stimulation, which leads many to adopt an opposite or vacillating course, and to allow their patients to die from exhaustion." "I must tell you, *in limine*," he writes, "that is far more dangerous to diminish or withdraw alcohol than to give too much" (p. 484). Again—"I cannot too strongly impress upon you that, to do good with stimulants, you must use them early, with care and watchfulness, in very definite quantities, and not in a vacillating or timid manner. . . . The harm which they do (in disease) is grossly and unfairly exaggerated, and always due to the slovenly administration of them" (p. 270).

These statements are certainly entitled to the credit of being the fruit of a very strong and undoubting conviction. But are they well founded in fact? Is the large use of the stronger alcoholic liquors in acute disease so necessary? Are the dangers of their injudicious use to be found always, and alone, on the side of *under*-stimulation?

To both these inquiries I am led by experience to give a negative answer; and as, even apart from all theory, the statement of the facts is important, I shall ask your permission

to place some of them before you in an extremely condensed form, referring to previous communications for the details of evidence.

As regards epidemic fever in the first place, I believe I have unassailably demonstrated that its treatment may be successfully conducted with allowances, even in the very worst cases, of stimulants far less in quantity, and far less continuously given, than those on which Dr. Todd was accustomed to insist from day to day (as above shown), in the face of quite apparent symptoms of alcoholic coma, under the mistaken idea that life could not be preserved without going to the very verge of "over-stimulation." In a rather minutely detailed narrative of two months' experience in the Glasgow Fever Hospital, I have accurately recorded 68 cases of febrile disease (chiefly typhus fever) in males, and 58 cases in females, in the precise order in which they occurred, omitting no single case (even when sent to the hospital actually moribund) that crossed the threshold of the ward; and yet I have calculated that the *whole of the* 68 *male cases* consumed only 328 ounces of wine and 401 ounces of whiskey, being, in all probability, a less quantity of alcohol than was administered to the *one* young girl Copstock, whose case is mentioned above. The mortality of these 68 cases was only 6—*i.e.*, less than one in eleven, one of the deaths being in a case of pneumonia, one in enteric fever, the rest in typhus. The number of these cases is of course quite too small for a statistical analysis of any value, and it is not my intention to insist upon this at present, further than to say that all the available evidence goes to show that the mortality was, as compared with almost any similarly and equally exactly observed series of cases, remarkably small, and that Dr. Todd's results, so far as they are known, were in fact very inferior to mine in respect of *numerical* success.

It must be stated that in 49 out of the 68 males, and 34 out of the 58 females, there were absolutely no stimulants administered; and in many of the remaining instances the quantities given were so small as to be purely experimental, but at the same time such as to show that I did not, from any preconceived theory, or to carry out a dogma, willingly omit any reasonable opportunity of observing if stimulation appeared to do good. The details of the fatal cases leave it, of course, open to be argued that some of them might possibly have been saved by a larger administration of stimulants; but, on the other hand, I was quite satisfied at the time, and am equally satisfied now, that if on this side there was a possible error, there was also, to a certain amount, an unnecessary, perhaps even injurious, administration of them to some of the patients who recovered. To those who recoil distrustfully from numerical arguments, I

would recommend the study of these cases in detail. I believe that such a study of them will lead to the conviction that, under a habitual practice of high stimulation, the general result could scarcely have been better on the whole, while there is a good deal of reason to suppose that it might have been very much worse. Yet I should be sorry if any one drew the inference that I consider these cases as examples of a perfected or model treatment in all respects, or even that I look upon them as entirely conclusive with regard to the exact quantities of alcohol that may be most beneficially administered in fever. The only conclusion I wish to draw from them is, that the habitual, or continuous, or *alimentary* use of alcohol in fever is to be deprecated as at least unnecessary, and even to be suspected as possibly injurious.

On commencing hospital practice in Glasgow in the end of 1862, I found another great epidemic of fever already in progress. Four physicians were very soon at work in the fever wards; and I became aware, through various suggestive hints, that the *ratio* of stimulation I had insensibly adopted, after so many years of varied experience, was considered unusual, and even doubtfully orthodox, by some of the most respected of my senior colleagues. On one occasion it was pointed out to me, from the wine and spirit rolls of the house, that in the other wards of the fever hospital, at a particular date, fully six times as much wine and whisky were administered *per patient* as in mine; or rather, to state the matter more exactly, the wards might be considered as equally divided between two physicians who adopted a system of pretty high stimulation, and two others who followed a practice of very great moderation in this respect. Under these circumstances it became a simple duty to inquire into results, and to secure, in so far as it could be done without invidious personal reflections, that the lessons of experience should be made as plain as the nature of the facts permitted. I accordingly gave the necessary instructions to my assistants, and I had the satisfaction of having them followed out with the most minute accuracy and faithfulness in detail. The result was a triple series of cases, amounting to 595 in all, which were analysed and commented on in the Lancet, March 12, 1864.

It is difficult to state here in a condensed form what I believe to be the just conclusions from this experiment, without laying them open to some more or less plausible objections; but the following facts are, I believe, unquestionable, and will serve to to give an idea of the inferences fairly deducible from the whole.

In the year 1861 (commencement of the epidemic), before I had left Edinburgh, the recorded mortality of *typhus* over the whole of the Fever wards of the Glasgow Royal Infirmary was

18·86 per cent. In the year 1862 it was 16·72 per cent. In both these years the ratio of stimulation practised was rather high especially as regards the amount of wine ; the proportion, however cannot be exactly ascertained for the typhus cases separately, owing to the deficiency of data. In December, 1862, I became a physician of the Glasgow Royal Infirmary, but of course the statistics of that year can scarcely include any cases of mine treated to a termination.

In the years 1863 and 1864 the experiment above alluded to took place, and the number of cases biased towards a lower scale of stimulation amounted, I believe, to about one-half of those under treatment. The mortality of typhus fever as officially rendered in the books for the whole hospital, was :—

In 1863,	- - - -	13·91 per cent.
,, 1864,	- - - -	13·16 ,,

In the succeeding years (under yet a different arrangement) the mortality was as follows :—

In 1865,	- - - -	15·81 per cent.
,, 1866,	- - - -	16·4 ,,
,, 1867,	- - - -	16·95 ,,

It has to be added that during the years 1863 and 1864, the mortality at all ages of the cases under my own personal charge (a few cases being omitted in summer, when the change of assistants for a time threw the returns into a slight degree of confusion) was as follows :—

First series,	- - -	11·1 per cent.
Second series,	- - -	19·0 ,,
Third series,	- - -	10·3 ,,
Fourth series,	- - -	9·3 ,,
Total (amounting to 703 cases),		11·5 ,,

It thus appears that a total number of 703 cases, representing a very low scale (possibly, indeed, *too* low a scale) of stimulation, gives a mortality of 11·5 per cent., while the mortality from typhus in the adjacent years, in the same hospital and during the same epidemic, is from 15·81 to 18·86 per cent.

But by taking special account of the cases of the young (up to fifteenth and sixteenth year), the following very interesting results are obtained :—

In the two years of comparatively high stimulation (1861 and 1862) the mortality among the young in typhus in the fever wards of Glasgow Royal Infirmary was $3\frac{1}{2}$ per cent.

In the cases treated by me in 1863 and 1864, and corresponding to the four series of 703 cases at all ages, above mentioned,

there were in all 210 cases (taking in those recorded in the Glasgow Medical Journal) below the fifteenth or the sixteenth year of age; and among all these cases it is doubtful whether more than one was a death from typhus. It is better not to reduce this result to a per centage, however, as I believe it must be regarded, under any view of the facts, as a piece of surprising good fortune. But when we find that the mortality of children in fever in Dr. Todd's hospital practice was certainly considerable, and out of all comparison higher than this (making every possible allowance for imperfections of the record), it is difficult to resist the conclusion that to the young, at all events, the administration of alcoholic stimulants in high doses in fever is fraught with a very serious danger from "over-stimulation." For although there are no cases of children in fever recorded with details in Dr. Todd's published works, private information leaves no doubt on my mind that his method of administration, as above described, was extended to the most tender ages, as well as to the most delicate and abstemious individuals of adult age.

I have had most ample evidence before me, in consultations, that much injury—often, I believe, fatal injury—has resulted from the inordinate administration of stimulants in acute diseases, especially to the young; and therefore it has been not from any love of innovation or of paradox, but rather from a deep sense of personal responsibility, and under a most serious conviction of the importance of the subject, that I have been led gradually to the conclusions adopted in this paper.

These conclusions, except as regards typhus fever, cannot even now be stated in any very strict or definite form; but the fair analogies deducible from the facts, and the gradually and insensibly acquired experience gained from watching individual cases of general acute disease, concur in rendering probable most of the following inferences:—

1. The importance of proper nourishment and sustenance in febrile cases is very great, and nothing can be worse than the old, and now happily exploded, system of depletion and starvation. But it is not less an error to conceive of alcoholic stimulation as a proper substitute, in such cases, for ordinary food. Milk is the normal food of most persons in acute disease, and there are very few persons, even in severe fevers, who cannot receive it to the full extent of their powers of assimilation; but most of the other simpler elements of an ordinary diet may be employed with advantage in particular cases. Beef-tea (so much favoured by Dr. Todd, in conjunction with alcohol) is of very inferior nutritive value, and therefore of altogether secondary importance to milk; and further, beef-tea very often disagrees with the stomach when milk and farinacea can be

freely taken. In enteric cases beef-tea has been found occasionally to increase the diarrhœa, and it is usually to be avoided, or very cautiously given, on that account.

2. The proper mode of administering food in cases of febrile disease is to imitate, as closely as the condition of the patient admits, the usual practice in health; and most patients, even in severe fevers, retain so much of the habits and functions of health as to enable them to digest a good deal of simple food, conveyed into the stomach at proper intervals, and with sufficient intervals of rest to allow of a return of the desire for food in some degree before again giving it. To give brandy and beef-tea every hour or half-hour, and to continue this practice for days and nights together, even wakening up the patient (as is recommended by Dr. Todd) in order to give him his food and stimulant, is the surest of all ways to destroy whatever remains of natural appetite, and to derange altogether the already much weakened function of assimilation. In a few almost desperate cases, where the power of swallowing is nearly lost, it may be advisable to give food at much more frequent intervals during waking hours than in other cases; but rarely, if ever, to disturb the patient when asleep.

3. The proper use of alcoholic stimulants in cases of acute disease is nearly the same as in other cases, or in comparative health—viz., to quicken and develop the appetite for real food, and the power of assimilating it. The proper and normal time, therefore, for giving these stimulants in fevers is *along with the food—i.e.*, at the *regular* meal times, and *not* during the intervals; except in cases where the nervous system is much disordered, and where a moderate dose of the stronger stimulants may sometimes be of great use in procuring sleep.

4. The proper dose of alcoholic stimulant, and also the proper kind of stimulant to give in each case, is subject to considerations derived much more from the age, sex, and previous habits of the patient than from the severity or character of the fever. It is an error to suppose that patients affected with very severe symptoms of acute disease are capable of tolerating *indefinitely* greater amounts of alcoholic liquors than can be given in milder cases, or to the same persons in health. It is even probable that in some cases the susceptibility to over-stimulation is greater in fevers than it is in health. At all events, it is usually a practical error to carry stimulation much beyond the line above generally indicated.

5. In most cases of young persons, and in very many of adults not accustomed to the daily or frequent use of alcoholic liquors, these ought not to be given in quantity, or even at all, without the most clear evidence of their being really required. The effect of each dose should be carefully watched, and *it is*

almost always safer to withdraw the stimulant entirely for a period of hours than to run the risk of over-stimulation. It is almost certain, from facts already observed, that in young persons the mortality of fevers is greatly increased by the *continuous* administration of alcoholic stimulants, even when the more striking or obvious symptoms of over-stimulation do not become apparent.

6. The effect of stimulants moderately and judiciously used in certain critical states of acute disease is to restore and refresh the patient, to favour natural sleep, to lower the rate of the pulse, to quicken the appetite, and increase the power of assimilating food. The effect of stimulants continuously or immoderately given is to destroy the appetite for food, to produce torpor, to give rise to more or less profuse sweating, to dry the tongue, to prolong the febrile debility, and to protract the crisis. There is reason to think that in typhus fever the normal crisis may be delayed for several days by the constant administration of brandy, after the manner recommended by Dr. Todd.

7. In the self-limited fevers, in which the phenomena of the crisis are well known, and the course of the disease may be easily defined and anticipated, it is usually requisite to be very sparing of stimulants in what may be termed *normal* cases, because in these the disease is to be recognised as running a definite course; while any considerable excess has a tendency to convert the case into an abnormal one, and to postpone the crisis. It has already been sufficiently indicated that, in the opinion of the author of this communication, alcoholic stimulants rank with drugs and medicines rather than with food. The same minute knowledge of the course of fevers which induces a well-educated modern practitioner to abstain from constantly drugging his patient will also, in most cases, lead him to abstain from stimulation. And, on the whole, it may be confidently anticipated, as a result of improved consideration given to the subject, that the profuse and continuous administration of alcoholic stimulants, with a view to alimentation in acute disease, will ere long be abandoned as inconsistent with an enlightened physiology and a sound practice. While stimulants will continue to be prescribed to the sick, on the same principles and for the same ends as causes them frequently to be taken with refreshing and beneficial results in comparative health, their function in acute disease will more and more come to be recognised as a strictly limited one; so that *continuous* administration of them, or administration carried up to such doses as 24, 36, or 48 ozs. in the twenty-four hours, will be abandoned as involving an error in principle, and a serious danger to life in actual practice.

8. A subordinate, though still very important consideration,

bearing upon such profuse and continuous stimulation as is above referred to, is that such liberal doses of wine and spirits given habitually under medical advice, tend to give a wrong bias to public opinion, and (even apart from the grave moral consequences arising from the abuses of alcoholic liquors) to involve the whole medical practice of the country in a system of unnecessary, and therefore wasteful, expenditure. It is as nearly as possible a demonstrated fact, that much of what is spent in wines and spirits for the sick in hospitals (and therefore probably also in private practice) is unnecessarily, if not injuriously, spent. Typhus fever, as it occurs in Glasgow, almost always among the poor, and often among the most ill-nourished, debilitated, and dissipated classes, is the very type of a disease which would appear to require the highest doses, and the most frequent and liberal administration, of alcoholic stimulants. Yet it has been clearly shown that typhus fever in Glasgow may be *so treated as to have a diminished mortality*, with the aid simply of milk diet and careful nursing; alcoholic stimulation being deliberately maintained upon a scale so low as to make it quite an exceptional, and therefore purely therapeutic, agent. In the City of Glasgow Fever Hospital, the careful and most scrupulously watched experiments of Dr. J. B. Russell have led almost insensibly, and without any fixed plan, but *without an increased success as regards results*, to lower from year and year the scale of stimulation on the whole, until last year the calculated amount of absolute alcohol administered in the form of wines and spirits to each patient, on an average, during each day of the treatment, was less than *one-sixth of an ounce* (0·1630 oz.), and the expense of this quantity was little more than three farthings; while the entire bill for wines and spirits consumed, during a year in which 969 cases of febrile disease (mostly typhus) were under treatment, was £34 5s. 6d. The mortality of typhus (including all the cases admitted moribund) during the same period was in this hospital only 9·05 per cent.; being the lowest ratio of mortality, I suspect, that has ever been attained in the treatment of so large a number as nearly a thousand cases, accurately distinguished as genuine typhus.—*Glasgow Med. Journal, Nov.* 1868, *p.* 15.

2.—SULPHUROUS ACID IN TYPHOID.

Sulphurous acid in typhoid is highly praised by Dr. R. Hamilton, who has given it in large doses. To children he gave it in drachm doses every four hours, and to adults in three drachm doses. He regards it "as in reality but the internal administration of sulphur!"—*Practitioner, Feb.* 1869, *p.* 116.

3.—THE PREVENTIVE TREATMENT OF SCARLET FEVER.

By Dr. Peter Hood, London.

In the ordinary run of cases the first symptom usually complained of is headache, next soreness and swelling of the throat, followed by vomiting—and we find that the aforementioned symptoms are relieved by the vomiting taking place. The healthy action of the liver is interfered with, and the bile, instead of taking its natural course, finds its way into the stomach, and is invariably found in the materials ejected. Hence the importance of giving an emetic at the onset of the fever, if vomiting have not occurred. We may to a certainty judge, for our guidance, of the presence of bile in the stomach by the appearance of the tongue ; if this member be covered, or only partially so, with a brown fur, bile will be thrown up as soon as the act of vomiting occurs.

We sometimes meet with a case of continuous vomiting, attended with extreme irritability of stomach ; this condition, if judiciously managed, is not fraught with danger, as there is more to be apprehended from the absence of vomiting that when it is in excess. The perverted course of the bile points to a defect existing in the liver, which defect is one of congestion. Here, again, we are called upon to assist nature in relieving this important organ ; no medicine operates so beneficially in this case as a dose of calomel and scammony. And if we take the appearance of the tongue as our guide throughout the whole period of the fever, and when it is otherwise than perfectly clean administer gentle alterative medicines to sustain the healthy action of the liver, we shall most effectually prevent dropsy from occurring, and avoid deafness and all the other sequelæ attendant on this disease.

When the stomach has been relieved by vomiting, either by the operation of nature or art, and the liver and bowels also by the administration of an efficient dose of medicine, it is then the proper time to avail ourselves of the antiseptic property of quinine, *which drug is, according to my experience, as powerful in destroying the scarlatinal germ as it is potent in the cure of ague.* I do not hesitate to say that, if the previous injunctions as to the emetic and purgative are attended to, any medical man who has never before employed this medicine in the treatment of scarlet fever, will never employ any other when he witnesses the gratifying progress of a case only twenty-four hours after using it. He will find the pulse diminished in frequency, the soreness of throat and difficulty of swallowing scarcely complained of, obviating all necessity for the use of gargles, sponging, caustics, etc., the heat of skin most sensibly decreased, and the restlessness, frequently so distressing a symptom, succeeded by

a calm composure. In the worst forms of scarlet fever, in which the blood of the patient is in a dyscrastic state, indicated by virulent coryza, discharges from the mouth, eyes, and ears, owing to the disintegration of the mucose surfaces, it is imperative to administer iron with the quinine, and suitable doses of the tincture of sesquichloride of iron, or of the sulphate of iron, should be diligently persevered with; at the same time paying strict attention to procuring a daily alvine evacuation.

I must refer to one other subject connected with the treatment of scarlet fever, which I regard almost as important as the use of quinine itself. This is the disinfection of the sick room by the employment of chlorine; and here I must differ from what Dr. Budd's experience has led him to say on this subject. I quote the passage to which I refer:—"Many medical men are in the habit of fumigating the sick room, either constantly or several times a day, with chlorine or sulphurous acid pending the whole course of the fever. There can be no objection to this measure, but I do not myself attach much importance to it. Experience of the largest and most decisive kind has shown that chlorine—and I believe the observation applies equally to the other chemical agent—in the degree of atmospheric impregnation respirable by man, has no appreciable influence in preventing the spread of infectious disorders." Dr. Budd has not told us in what manner he has employed disinfecting agents, chlorine more especially, to enable us to judge whether his method of using them were likely to be efficient or not.

My experience of the beneficial effects of a free use of chlorine is directly opposed to Dr. Budd's views; and I am able to state from my own observation that, if this gas be properly used in the sick room of the patient, *the contagion of scarlet fever will be confined to that room.* My method of using it is as follows. I direct large coarse towels to be saturated with a solution of chloride of lime, and hung over the backs of chairs, and a sheet to be hung in front of the bed-room door. We may judge of the quantity required for disinfecting the room by smell and taste on going into it. This process should be continued throughout the course of the fever.

I have always found the effect of breathing the chlorine to be most refreshing to the patient and most soothing to the throat; for frequently, when patients have complained of a difficulty in swallowing previously to its being used, directly they have breathed the gas they have exclaimed, "I can breathe much better now."

I could give numerous instances of the power possessed by chlorine in localising the scarlatinal poison. I will confine myself, however, to one as a type of the others; and I select this instance on account of the unusual opportunity I had of

watching the progress of the case from the commencement, when it showed signs of being most severe, to its termination. I extract this case from short notes made at the time, giving the treatment employed for the subjugation of the fever.

Two years ago I was on a visit to a family in Scotland, where I stayed three weeks. On the morning after my arrival, the lady of the house came to me in great tribulation and asked me to see her little girl, eight years of age, who, she feared, had scarlet fever. This lady, two years previously, had lost a girl from scarlet fever about the same age, and her second son was very nearly following his sister. The mother told me that the illness of her other children began exactly with the same symptoms as the present little girl had. She had been quite well the day before, but in the evening complained of cold and had a rigor. I learnt that the child had been delirious throughout the night. She complained of intense headache, her throat was very painful, the tonsils were much swollen and of a deep red colour, and she had great difficulty in swallowing. Her eyes were blood-shot, and she had been repeatedly sick. Her skin was burning-hot, and there was a rash all over her body. Pulse 120; tongue very foul, and her breath very fœtid; great restlessness and intense thirst. I first saw her on the 9th of Aug., at 10 a.m. I ordered one grain of calomel, and one grain of James' powder, to be made into a powder with some sugar, one to be given every four hours; a tea-spoonful of the effervescing citrate of magnesia to be given one hour after each powder. Small pieces of ice and iced water to quench the thirst. This was very grateful to the child. The air of the room was impregnated with chlorine in the way described. When I saw her at 7 p.m. the child was better. She had taken three powders. The sickness and headache had left her. Her throat was less sore on swallowing; she having felt almost instant relief from this symptom the moment she breathed the chlorine. She had had several most offensive watery evacuations throughout the day. The rash and heat of skin remained the same. The tongue had quite changed its appearance from the brown colour of the morning, to a red, chalky condition. I ordered the powders to be left off, and no other medicine to be given until the morning, when she was to have a dose of the citrate of magnesia. On August 10th, the rash, which yesterday was of a dingy red, this morning was a vivid scarlet. The burning heat of skin and quickness of pulse remained the same. I ordered her one grain and a half doses of quinine, with ten-drop doses of dilute sulphuric acid, with tincture and syrup of orange peel to be given in water every six hours. Her diet was beef-tea and bread. When I saw her at midnight I heard that she had fallen asleep at 7 p.m., and remained so until that time. On the 11th,

the child was in all respects better. She had slept until 3 a.m.; awoke, and fell asleep again. The rash still continued. The pulse was less rapid, the heat of skin less, the throat more comfortable. She felt so well that she wanted to get up and be dressed. The tongue was more furred to-day. I ordered her a dose of scammony and calomel to be taken at night. On the 12th she was much better. The eruption was paler, the tongue cleaner, the pulse reduced to 95. The result from the powder was a healthy evacuation. On the 13th, the eruption had faded away. The patient was ordered to have a warm bath at night. It is unnecessary to continue the history of this case. The child went on for three weeks upon the same treatment, and never had a bad symptom—taking her quinine every six hours, with an occasional aperient at bed time, with beef-tea for her diet, and a warm bath every second night. Desquamation proceeded most satisfactorily, and at the end of this time her skin had resumed its normal character.

I attribute the short duration of the rash to the effect of the quinine and acid, as ever since I have employed these remedies I have found that the continuance of the rash is rarely beyond three days. On the other hand, I have often observed that, in cases where ammonia or chlorate of potash have formed the basis of treatment, the rash has lasted for a greater number of days.

The house in which this child was ill, was full of visitors, children, and servants, yet every one of them escaped the infection of scarlet fever; and I am unable to attribute their immunity from the disease to any other cause than the free use that was made of the disinfecting power of chlorine.—*British Med. Journal, Feb.* 6, 1869, *p.* 118.

4.—PROPHYLAXIS OF SCARLET FEVER.

Mr. Amos Beardsley, of Grange, Lancashire, sends us an important note respecting a method of arresting the spread of scarlatina, which he has found very valuable. When a patient suffers from scarlatina, he is to be washed all over, once or twice a day, with diluted carbolic acid. Mr. Beardsley says that in no case in which he has tried it with the first case in a house has there been any further spread of scarlatina in the family. For example, about a year ago he had a girl, seven years old, under his care, one of a family of five; she was attacked with well-marked scarlatina, and was immediately ordered to be systematically sponged with carbolic acid—one drachm to a pint of water. Also the rest of the household were desired to put carbolic acid into their washing water. Although there were no means of properly separating the other children from the invalid, none of them took the fever; the one patient

was severely ill, and scarlatina was in all the surrounding villages, and in remote parts of the village where the family lived. Mr. Beardsley has now had so much experience as to be convinced that this plan is most useful in preventing the emanation of contagious influence from patients, especially during the desquamating stage. We shall hope to give a more extended account of the results he has obtained on a future occasion.—*Practitioner, Feb.* 1869, *p.* 111.

5.—DIGITALIS IN SCARLET FEVER.

By Dr. Sydney Fennell, Llandaff.

For some years past it has been my custom to prescribe for my scarlet fever patients tincture of digitalis, in conjunction with nitric ether and nitrate of potass. The success of this treatment justifies me in recommending others to adopt it, now that the disease is again ravaging the country.

Of course, the ordinary action of digitalis in controlling the force of the heart's beat is well known; but may it not have also some power over that network of nerves embracing the whole arterial system, from the aorta to the extremities? I think so, from the peculiar soft, wave-like feeling imparted to the finger by the pulse at the wrist after a few full doses of the drug. And on this supposition I based my treatment of scarlet fever by digitalis; for whatever would reduce overaction in the arterial capillaries would lessen inflammation. Digitalis will do this without reducing the general strength, as antimony, venesection, &c., certainly do. I will not go so far as to assert that it is capable of curing inflammations of internal organs, such as the lungs, &c.; yet even in these it is extremely useful in controlling vascular action, and, when administered early in the fever, the inflammatory action in the glands of the neck subsides gradually, the fever leaves the patient in the usual time, desquamation is very slight, and the chances of chronic nephritis are reduced to a minimum. I will not say the infectious character of the disease is destroyed, yet I can confidently assert its power is lessened.

No one would suspect, if suppuration of the glands had commenced, that digitalis would prevent the formation of an abscess; yet I find, from my experience of these cases, the abscesses much circumscribed, which I attribute to the use of this drug.

I was surprised to find infants of about a month old tolerate so much as five drops of the tincture for a dose (though one

drop is generally sufficient), given consecutively for three days, every three or four hours, with advantage ; auscultation giving the usual number of beats (about eighty) in the cases where the larger dose was given.—*Lancet, Jan.* 23, 1869, *p.* 143.

6.—CARBOLIC ACID IN SCARLATINA, MEASLES, AND SMALL-POX.

By Dr. Alex. Keith, Normanby.

[The administration of carbolic acid internally is, we think, a new idea.]

During the last six months I have used the carbolic acid in fever, scarlatina, measles, and small-pox, with, I think, some success. I have during that period given it in 600 cases internally. Of these only five have died, and those from complication after, produced by bad nursing. I may state that, during the said time, I have had no less than 1500 cases in all. The deaths, including the five above mentioned, are twelve. The other cases were treated in the usual way, with salines, chlorate of potass, &c.

Without going further into detail, allow me to give you the "physiological effects" in few words. 1st, it produces profuse perspiration ; 2nd, it rapidly lowers the pulse, so much so, that in twenty-four hours the pulse will fall from 120 to 60—skin cool and moist, with subsidence of fever ; 3rd, the tongue, after the same time, will be clean, moist, and, in scarlatina, the soreness of throat much diminished ; 4th, after its use for the same time, the appetite continues to improve ; 5th, I have found it more useful at an early stage of the disease, although, given afterwards, it very much modifies the symptoms, and carries the patient through the different stages of the disease much more quickly than any other treatment that I have seen ; 6th, in some cases the urine appears smoky, as if fine charcoal had been used with it. These are the principal points I have observed from its use. I could give you numbers of cases, but I will at present content myself with the foregoing statement, and simply add the formula in which I give it—carbolic acid and acetic acid, of each one drachm to one drachm and a half ; tincture of opium, one drachm ; chloric ether, one drachm ; water, to eight ounces. I give a tablespoonful of this mixture every four hours, until the fever, &c., has subsided. Then the after-treatment is simple. I find that, after the first dose, the patients rather like it than otherwise.—*Lancet, Jan.* 23, 1869, *p.* 143.

7.—REMARKS ON THE NATURAL HISTORY OF RHEUMATIC FEVER.

By Dr. William W. Gull, and Dr. Henry G. Sutton.

[This article is an abstract of a paper read before the Royal Medical and Chirurgical Society.]

The authors are desirous of bringing under the notice of the profession a few more cases of rheumatic fever which have been treated by mint water, or, in other words, which have been allowed to run their natural course. They moreover desire to point out what appears to be the natural course of rheumatic fever with reference to the heart, and to show in what proportion of cases the heart became involved when rheumatic fever was treated by mint water. Lastly, to consider if there is any evidence to prove that the heart is more frequently involved when rheumatic fever is treated by mint water, or when treated by alkalies, by lemon-juice, or by blisters. This paper is based on twenty-five cases of rheumatic fever, twelve of which occurred in Guy's Hospital, most of them under the care of Dr. Gull, and thirteen occurred in the London Hospital, under the care Dr. H. G. Sutton. The particulars of the twelve cases have been already recorded in the Guy's Hospital Reports, and the remaining thirteen cases are recorded in the present communication to the Society. Of these twenty-five cases, eighteen were females and seven were males. The average age of the patients was nineteen years. All the patients were suffering from their first attack of rheumatic fever, and the disease was well marked. The temperature of the body during the acute symptoms reached in some cases 104° and 103°; in other patients it was 101° and 102°. Taking an average of all these cases, the temperature was about 102° during the acute stage. The average duration of the acute symptoms, as estimated by the thermometer and general symptoms, was ten days. Taking all the cases that have been recorded by the authors, the average duration was 9·1 days. The total duration of the acute symptoms from their commencement, including the time the patients were ill before coming into the hospital, to their cessation, was on an average seventeen days. The authors next proceed to inquire if the duration of rheumatic fever is longer when treated on the expectant plan, or when treated by drugs; and they considered that no one plan of treatment has any great advantage as regards shortening the duration of the disease. Drs. Gull and Sutton agree with Dr. Barclay in considering that we are not yet in a position to say that alkalies exercise any influence in curtailing the duration of the disease. They are also of the same opinion respecting lemon-juice. With regard to Dr.

Herbert Davies's blister treatment, they remark it relieves very much the pain and sufferings of the patients in some cases; but it does not appear to curtail the rheumatic process. And the authors remark, "Our cases appear to teach that the rheumatic process runs its course under the expectant treatment as favourably as under the treatment by drugs." Drs. Gull and Sutton next proceed to inquire what evidence there is to show that the drug treatment prevents the heart becoming diseased, and they give a detailed account of the state of the heart in their twenty-five cases. Every one of these twenty-five patients were suffering from their first attack of rheumatic fever, and twelve of the number had organic disease of the heart when admitted into the hospital; two had some, but not very well-marked, evidence of organic disease of the heart when admitted; and in eleven there was no heart disease on admission. No organic disease of the heart supervened while under treatment and the heart was healthy when these eleven patients left the hospital. They remark the experience gained in these cases of rheumatic fever, which were allowed to run their natural course uninfluenced by drugs, tends to prove that, if patients are admitted into the hospital suffering from a first attack of rheumatic fever, and the heart is not diseased on admission, it will very rarely become organically diseased while patients are under treatment. The opinions of Drs. Garrod, Dickinson, Herbert Davies, Geo. Owen Rees, and Basham are then quoted to show that the heart did not, or very rarely did, become diseased when rheumatic fever was treated in the hospital by full doses of alkali, by blisters, by lemon-juice, or by nitrate of potash, and they observe: "It appears to us that there is not sufficient evidence to prove that any of the advocated systems of treatment have power to prevent the heart becoming diseased. In concluding that the treatment has prevented the heart becoming diseased, we have overlooked the fact that there might be no tendency at the time the patients were under treatment for the heart to become diseased, and our cases show that the good results which have been attributed to the influence of the remedies also occurred when no special remedies were used. Our cases, therefore, tend to teach that these good results were due, not to the drugs, but to the natural course of the disease." The authors then endeavour to show that when the heart becomes diseased in rheumatic fever, it does so at an early stage of the disease; and if it does not become diseased during the first week of the rheumatic fever, it rarely does so afterwards; and they give abstracts from twenty-two cases of rheumatic fever to demonstrate this.

Drs. Gull and Sutton's conclusions are as follows:—

That when the patient's heart was healthy on admission into the hospital, it was very rare for it to become organically

diseased while the patients were under treatment by mint water —or, in other words, when the rheumatic fever was allowed to run its natural course.

That the evidence before the profession shows that the heart very rarely became diseased while patients were under treatment in the hospitals, and that this was the case when patients were treated by alkalies, lemon-juice, or by blisters to the joints.

That there is not sufficient evidence before the profession to prove that any of the advocated remedies have power to prevent the heart becoming diseased.

That in rheumatic fever the tendency is for the heart to become diseased during the first few days of the fever; and should it escape the early days of the disease, there is each day a lessening tendency to its implication. Hence the cases would appear to show that, if at the end of the first week of the rheumatic fever the heart is free from disease, then there is little or no tendency for it to become diseased during the later weeks.

That the reason why the heart did not become diseased when rheumatic fever was treated by alkalies, blisters and by lemon-juice is to be attributed, not to the influence of the drugs, but to the natural course of the disease; for the patients did not come under treatment until the rheumatic fever had been going on some days, and until the period when the heart was most liable to become diseased had passed over.

The authors conclude by saying: "Hitherto the investigation into the therapeutics of the rheumatic process has been rendered all but valueless by the deficiency in preliminary data. At present, therefore, as regards treatment, our cases seem to show that we are limited to a careful regimen of the patient. Rest, mechanical and physiological—rest in the very outset of the disease. We ought not to wait until the rheumatic process has become well developed in the joints. To regulate the temperature. To moderate excessive skin function by sponging the surface of the body. To allay pain, by placing the patient in an easy position, and sometimes by opiates. To sustain the organic nerve power by light diet, and occasionally by small doses of alcohol. To procure rest by the simplest means, especially avoiding such movements of the body as may excite the circulation. In fine, to place the patient in a physiological state of mean rest, if it may be so termed, of the nervous, the circulatory, the muscular, and digestive systems. To do this fully will often tax all our energies, and require often more consideration that is requisite for prescribing any supposed appropriate drug treatment. We are, therefore, at present advocates of the exactest treatment of the patient under acute rheumatism, though we may doubt the value of so-called specific drugs."—*Lancet, Jan.* 16, 1869, *p.* 102.

8.—THE ALKALINE TREATMENT OF RHEUMATIC FEVER.

By Dr. Henry Wm. Fuller, Senior Physician to St. George's Hospital, and Consulting Physician to the North London Hospital for Consumption.

[It has been asserted by several critics, and those of experience and good opportunities of observation, that rheumatic fever gets well just as quickly without specific treatment, as with. Dr. Fuller disputes the facts upon which these conclusions are based, and shows from their own cases that the natural duration of rheumatic fever is six weeks, and not ten to twenty days as stated by them. Dr. Fuller gives his own experience as to this mode of treatment in hospital and private practice, and then points out the causes of its failure, when failure apparently follows its use.]

First, what is meant by "the alkaline treatment?" I do not mean the administration of salines or small doses of the alkalies, such as half-drachm doses of the carbonate of potash every four hours; for, in my experience, these remedies so administered exercise absolutely no control, in either shortening the duration of the disease, mitigating the patient's sufferings, or protecting his heart from mischief. Neither do I mean the administration, throughout the attack, of large doses of the alkalies, such as a drachm and a half or two drachms every four hours, for these remedies, so administered, would depress the patient, and might even produce dangerous consequences. Moreover, experience leads me to believe that they certainly would not tend to his recovery. By "the alkaline treatment," I mean a plan of treatment in which alkalies play an important part, but which consists not only in the administration of alkalies, but in the careful regulation of the secretions, the strictest attention to diet, and the administration of tonics, such as quinine and bark, as soon as the patient can bear them. Being convinced that as soon as the system is alkalinised, as shown by the alkalinity of the secretions, a great safeguard is obtained against inflammation of the heart, or of any of the then unaffected joints, my practice is to give not less than an ounce and a half of the alkaline carbonates, either alone or in combination with a vegetable acid, during the first twenty-four hours of treatment. They should be given largely diluted with water, either in effervescence or otherwise, as is the most grateful to the patient. Sometimes the whole quantity of the alkali is ordered to be mixed with three imperial pints of water, and taken as a drink in the twenty-four hours—a form which is often very grateful to the patient—but more commonly two drachms are ordered to be taken in effervescence every three or four hours in combination with an ounce of lemon-juice, or with

half a drachm of citric acid dissolved in four ounces of water. At the same time, if the bowels are torpid, ten grains of colocynth and calomel pill are prescribed at bed-time. As soon as the urine, when freshly voided, ceases to show an acid reaction —which is usually the case after twenty-four hours—the quantity of the alkali is diminished by one-half, six drachms only being administered during the succeeding twenty-four hours. At the expiration of that time, if the urine remains alkaline, three drachms only are given in the next twenty-four hours; and on the fourth day, if the urine still shows an alkaline reaction, the form of the medicine is altogether changed. The treatment ceases to be essentially alkaline: either a cinchona draught is ordered to be taken three times a day, containing a scruple or half a drachm of bicarbonate of potash—a little more or a little less, according to the condition of the urine, which should be kept nearly neutral—or three grains of quinine dissolved in lemon-juice is given three times a day in effervescence, with half a drachm of bicarbonate of potash or soda. Throughout the attack an aperient pill is given whenever it is needed, and opium is rarely, very rarely administered—never except under conditions of extreme nervous irritation. The diet is restricted to beef-tea or broth, with soda-water and milk and barley-water as a drink, as the smallest quantity of solid food, given a day before the tongue has thoroughly cleaned, is apt to induce a recrudescence of the disease. Wine and spirits are strictly forbidden, though experience has convinced me that wine and spirits prove less hurtful than the smallest quantity of solid food. If the patient is chilly, he is ordered to lie between the blankets; but, otherwise, he is allowed to lie between the sheets, and is kept tolerably cool. The heaping of extra blankets on the bed is strictly prohibited, as they tend to keep up excessive perspiration, and thus, by producing exhaustion, retard the patient's recovery.

The merits which I claim for this plan of treatment, which I have carried out both in hospital and private practice for twenty years, are: 1st. That it affords very speedy relief to the patient's sufferings—relief far exceeding that produced by any opiate. 2nd. That it checks the rheumatic action, mitigates the severity of the disease, and promotes the speedy recovery of the patient. 3rd. That it protects the heart from mischief, and thus obviates one of the most distressing maladies to which flesh is heir.

In proof of these statements, I would adduce the following facts:—1st. The patients very commonly doze, without the aid of opiates, within twenty-four hours after the first administration of the remedies and almost invariably sleep tolerably soundly for an hour at a time within forty-eight hours after the commencement of treatment, showing how great is the relief

afforded. Coincidently with the repose thus obtained, the temperature of the body falls—usually to the extent of two or three degrees within forty-eight hours, and not unfrequently to its natural standard within three or four days—the frequency of the pulse decreases by ten or fifteen beats, the quantity of the urine is largely augmented, and the pain in the joint is greatly lessened.

2nd. In many instances, within a week, and almost invariably within ten days from the commencement of treatment, the patient—who on admission was in agony of pain with swollen joints, incapable of moving, and bathed in the profuse acid perspiration of rheumatic fever—becomes cool and free from pain, and anxious to leave his bed. In ninety-four consecutive cases, which were tabulated with a view to this inquiry, the average duration of the disorder after the commencement of treatment was only eleven days—in other words, the patient not only reported himself free from pain, but *was up and dressed* at the expiration of eleven days. The hospital register of my cases tells a very similar tale, though the figures are necessarily somewhat different. Taking 116 consecutive cases of rheumatic fever which were admitted under my care into St. George's Hospital, between January 1, 1860, and December 30, 1865, and excluding twenty-eight in which pericarditis existed at the time of the patient's admission, the average term during which the patients remained in hospital was only 20·1 days; and as the patients are always kept in hospital for a week or ten days after the pains have ceased in order to guard against a relapse, the average duration of the disease under treatment was only eleven or twelve days. These figures include all cases attended with endocardial murmur. Even including the twenty-eight cases of pericarditis, the average stay in hospital was only 22·2 days; a result, I believe, which has never been attained under any other plan of treatment.

3rd. I have submitted 439 cases of rheumatic fever to the alkaline treatment in hospital and private practice: the disease has not proved fatal in a single instance; in nine cases only, or in little more than 2 per cent., has any cardiac complication occurred while the patient was under my care, and in six of these the murmur was discovered within twenty-four hours after the commencement of treatment, and, therefore, before the remedies can have taken effect; nay, it may even have existed in an incipient state, though it escaped detection when the patient was first seen. Dr. Dickinson's statistics are almost more striking, because they exhibit the contrast between the effects of the alkaline treatment when properly carried out, and all other varieties of treatment, including alkalies in inadequate doses. While he was Medical Registrar at St. George's Hospital, he

carefully noted all the cases of rheumatic fever admitted under the physicians, and during the space of five years there were admitted 161 patients whose hearts were sound at the date of admission. One hundred and thirteen of these cases were submitted to treatment other than alkaline, and in thirty-five of these, or in 30·8 per cent., the heart became involved; whereas the heart remained free from mischief in forty-seven out of the forty-eight cases which were submitted to the alkaline treatment —in other words, the heart was affected in little more than 2 per cent.

Thus, then, it is obvious from statistics on a large scale, carefully collected by independent observers in the wards of St. George's Hospital, that "the alkaline treatment," when properly carried out not only affords speedy relief to the patient's suffering, but almost ensures immunity from disease of the heart. It only remains for me to point out the causes which have led to the failure of this treatment in the hands of certain practitioners. In so doing, I give the result of clinical experience, both in hospital and private practice.

The first, and most common cause of failure, is the administration of insufficient doses of the alkalies in the early period of the attack—of doses which, though they would be regarded as large under ordinary circumstances, are practically useless for the arrest of rheumatic fever. An ounce and a half is the minimum dose of an alkaline carbonate, which will suffice to overcome the acid condition of the system during the first twenty-four or forty-eight hours of treatment, and in sthenic cases two ounces are often needed. Four or five drachms, which form the maximum dose, administered daily by many persons who imagine that they are using alkalies efficiently, are simply useless. They neither mitigate the pain nor shorten its duration, nor do they protect the heart from mischief.

The second cause of failure is mistaken diagnosis, and the consequent administration of alkalies in cases in which they do not exercise a curative influence. It constantly occurs to me to see persons, who have been drenched for a week or ten days with alkalies, under the impression that they were afflicted with acute rheumatism, who, on investigation, prove to be suffering from acute osteo-arthritis, or so-called rheumatic gout from gonorrhœal rheumatism, or from atonic gout—disorders which, though resembling rheumatic fever in many of their features, are yet totally distinct from it in their essential characters, and require an entirely different plan of treatment. Indeed, in most of these cases, full doses of the alkalies prove absolutely noxious; they depress the patient, and fail together to relieve his symptoms.

The third cause of failure is an improper alimentation. The diet should be restricted to broth, beef-tea, or other liquids; all solid food being strictly prohibited; but, in many instances, I find that little heed is paid to this matter, and that throughout the attack the patient is permitted to take whatever nourishment his appetite will enable him to swallow. Yet there is nothing of which experience has more fully convinced me than that the strictest dietary is of the utmost importance—of infinitely greater importance than in gout—and that the taking of solid food, such as fish or meat, however small the quantity, will serve to keep up imperfect assimilation, and not only counteract the effect of remedies, but almost indefinitely protract the disease. The desire for solid food returns long before the power to digest it, and so it happens that a piece of meat taken a day before the tongue has cleaned, and the stomach is in a condition to digest it, proves not unfrequently the cause of a relapse.

[Dr. Fuller illustrates the treatment he ordinarily pursues by the following case.]

G. S., a groom, aged 22, was admitted into the Hope ward on the 18th of May. He had suffered from rheumatic fever a twelvemonth previously, and was under treatment for a period of six weeks. The present attack commenced, a week before his admission, with shivering, followed by wandering pains in the limbs, and inflammation and swelling of several of the larger joints, which at the date of his admission were red, swollen, and exquisitely painful. The heart's sounds were clear and its rhythm was normal; the skin was hot and perspiring profusely, the perspiration being intensely acid; the pulse 118, regular, and of good strength; tongue thickly furred and red at the tip and edges; bowels costive; urine scanty and turbid, with a copious deposit of lithates. He was ordered ten grains of colocynth and calomel pill immediately, and the following draught every four hours, viz. soda bicarb. ℥jss., potassæ acetatis ℥ss., haustûs acetatis ammoniæ ℥ij., to be taken in a state of effervescence, with half a drachm of citric acid dissolved in an ounce and a half of water. His food was restricted to beef-tea. On the following day the urine had become clear and alkaline, and the pains were somewhat easier; the draught therefore was repeated only three times in the twenty-four hours. On the 20th the urine was still alkaline, the pulse had fallen to 80, the pains had greatly subsided, and he had slept at intervals throughout the night. On the 24th very little pain remained, and as the urine was decidedly alkaline the following draught was substituted for that already given, viz. potassæ bicarbonatis ℥ss. haustus cinchonæ ℥jss. ter die. On

the 26th he was quite free from pain, and was up and about the the ward; and as he complained of being hungry, an egg was given in addition to the beef-tea. On the 30th he remained free from pain, and the urine was still alkaline; fifteen grains of the potash were therefore omitted, and he was allowed the "ordinary diet" of the hospital. On the 1st of June he had been a week free from pain, and he was therefore permitted to leave the hospital.

During the time I held the office of Medical Registrar, namely from January 1st, 1845, to May 1st, 1848, 246 cases of acute rheumatism were admitted into St. George's Hospital, and they remained in the hospital on the average thirty-five days; of these 246 patients, 119, or 1 in every 2·06, had some form of recent affection of the heart; and 1 in every 6·3 had pericarditis. During the six years ending December 31st, 1850, 17 cases, or about 1 out of every 27 cases of rheumatic fever admitted into the hospital, terminated fatally.

[The results of the plan of combating the disease by full and repeated doses of alkalies present a remarkable contrast to those first referred to.]

I have submitted 417 cases of rheumatic fever to the alkaline treatment in hospital and private practice; the disease has not proved fatal in a single instance; in nine cases only, or in little more than 2 per cent, has any cardiac complication occurred while the patient was under my care, and even these, for the reason below assigned, can hardly be regarded as consequent on failure of the remedies; the disease has been arrested, and the patient has been out of bed in many instances within a week from the commencement of treatment, and in ninety-four consecutive cases which were tabulated with a view to this inquiry, the average duration of the disorder, after the commencement of treatment, was only eleven days—in other words, the patient reported himself free from pain and was up and dressed at the expiration of eleven days. The Hospital Register of my cases tells a very similar tale, though the figures are necessarily somewhat different, because, with a view to guard against relapse, the patients are kept in hospital for a week or ten days after cessation of their pains. I have gone over my case-books and the Hospital Register for five years, beginning with the 1st of January 1860, and terminating on December 31st, 1865, during which period I find that 116 cases of rheumatic fever were admitted under my care. Excluding eighteen cases in which pericarditis existed at the time of the patient's admission, the average term during which the patients remained in hospital was only 20·1 days, which gives about 11 or 12 days as the average duration of the disease; and even including the cases

of pericarditis, the average stay in hospital was only 22·2 days —a result which, I believe, has never before been attained.

In order that you may not misapprehend the nature of the alkaline treatment, I will briefly describe its object, and the means by which it can best be carried out.

The term "alkaline treatment," as I would have you understand it, implies not merely the administration of salines and small doses of alkalies, but the exhibition of alkalies or the neutral salts in full and repeated doses—in doses adequate to produce alkalinity of the urine, if possible, within twenty-four hours. Whether it be that the skin and kidneys form the channels by which the poison of rheumatism is usually eliminated, and that the condition of their secretions affords an index to the amount of the rheumatic element in the blood, most certain it is that in rheumatic fever the urine is usually intensely acid and loaded with lithates, and the perspiration profuse, sour-smelling, and acid to a degree not met with in other disorders; and that so long as this condition of the secretions continues, the temperature of the body and the pulse keep up, the pains persist, and the heart is liable to become affected. It is equally certain that as soon as this extraordinary acidity is counteracted, as shown by alkalinity of the urine and a decrease in the acidity and profuseness of the perspiration, the pulse and the temperature of the body fall, the pains diminish, and the heart may be regarded as safe from attack.

I will not stop to inquire whether there is trustworthy evidence of a distinct rheumatic element in the blood—an acid material which alkalies may neutralise and counteract—or whether the whole train of symptoms observed in rheumatic fever may not be referable to perverted nervous action and consequent local disturbance of nutrition. The disease is certainly attributable to malassimilation, and my impression is that the nerves play a far more important part in its causation than is commonly supposed. Probably we should not be far from the truth if we were to say that rheumatic fever is due to the presence of an acid product of a peculiar form of malassimilation which frequently originates in disturbance of the nervous system. Practically, however, it matters very little what theory you adopt: the indications for treatment are clear and intelligible, and must remain unaffected by any theory. They are simply these—to restore the normal condition of the urinary and cutaneous secretions, to promote the elimination of the rheumatic element by keeping up a free action of the bowels, and meanwhile to tranquillise the patient's irritability and mitigate his sufferings.

[Opium, although the best of all sedatives, is an unsafe drug

in acute rheumatism, it checks secretion and tends to perpetuate the acidity on the existence of which the disease depends. Speaking of the blister treatment of acute rheumatism as pursued by Dr. Herbert Davies, Dr. Fuller observes:]

I believe that no other method of treatment at present known has the slightest influence in shortening the duration and mitigating the danger of rheumatic fever. The blister-treatment, however, deserves a passing notice. Whatever the rationale of its action, there cannot be a doubt that it fulfils in some degree the indications for treatment which I have already pointed out. It renders the urine alkaline, probably by the shock which it produces and the drain to which it gives rise; and it also seems, in some instances, to shorten the duration of the disease. But I have seen and heard enough of it to know that it cannot be trusted to for the protection of the heart, and that the indiscriminate and extensive blistering of the inflamed joints, which constitutes its very essence, is often productive of excessive pain, and may not be unattended by danger.

I will proceed to give you full directions for carrying the alkaline treatment into effect. And first as to the alkali and neutral salts which should be selected, and the dose in which they should be given. Practically it matters little whether soda or potash be given, or whether the alkali be free or combined with any of the vegetable acids; but ammonia and its salts do not fulfil the indications for treatment so often referred to, and fail to exercise any influence over the course of the disease. Experimentally I have given a solution of ℥ij. of carbonate of ammonia every three hours, rendered effervescent by the addition of ℥ss. of citric acid; and I have continued this treatment for eight consecutive days without any apparent result beyond that of rendering the pulse rapid and weak, and ultimately causing the patient to vomit; the urine remained intensely acid, and usually loaded as at first; the perspiration quite as sour and profuse, and the rheumatic pains just as severe. But I have repeatedly tried the experiment of giving soda alone and potash alone; I have given the carbonates of each alkali alone, and the neutral salts of each alkali alone; and I have also given both the free and the neutral salts in every variety of combination. The only difference I have been able to discover between these various methods of medication is that the stomach is usually more tolerant of the remedies in their neutral form than when they are uncombined, and that to some persons potash proves less nauseous than soda; but inasmuch as when the stomach is unduly acid a free alkali will accomplish what a neutral salt will not, and inasmuch also as soda forms an important element of the blood, and may be fairly presumed to induce certain changes

which would be imperfectly effected by potash alone, my usual practice is to combine the two alkalies, giving a certain proportion of both in the form of neutral salt, but adding a few grains of the carbonate of one or other of them in a free state. A favourite formula is the following, viz. ℥ss. or ℈ij. of the acetate of potash together with ℥jss. of carbonate of soda dissolved in ℥iij. or ℥jv. of water, rendered effervescent by the addition of ℥ss. or ℈ij. of citric acid, or ℥j. or ℥jss. of lemon-juice.* The result is the administration of acetate of potash and citrate of soda with about ℥ss. of uncombined carbonate of soda. In most cases this draught is well borne by the stomach, and if repeated every four hours will render the urine alkaline within twenty-four hours; but in severe cases it may be necessary to give it every three hours, for if administered less frequently the urine will sometimes remain acid until after the lapse of thirty-six or even of forty-eight hours, and thus the heart will be exposed for so much longer to the risk of inflammation. In exceptional cases the amount of acid formed is such as to resist the effect of these doses of alkalies for three or even four days, but experience has taught me that this happens only when the liver and bowels are sluggish; therefore whenever I find the tongue furred and yellow, and the urine acid after the alkalies have been administered for forty-eight hours, it is my practice to administer three grains of calomel—guarded by opium if the bowels are loose—or in combination with colocynth if the alvine discharges are scanty and deficient; and in either case the urine commonly becomes alkaline directly a free secretion from the bowels has been set up.

As soon as the urine has been rendered alkaline, whether at the end of the first, second, or third day of treatment, the alkaline draught is repeated every six hours only; and if on the following day it still retains its alkalinity, the medicine is given twice only in the twenty-four hours. If that dose suffices to keep the water alkaline for two days more, quinine or bark is given in combination with half or less than half of the alkali contained in the former draught; and as the tongue clears and the symptoms subside the quantity of the alkali is cautiously diminished until a simple quinine draught is taken. Meanwhile, when the tongue has cleared satisfactorily, a little fish or meat is allowed in addition to the beef-tea or broth to which the diet had been hitherto restricted.

Such is the treatment I would have you pursue in rheumatic

* If the bowels are torpid, I vary the form of this draught by prescribing ℥ss. or ℈ij. of potass. tartrate of soda instead of the acetate of potash, and tartaric acid instead of the citric acid.

fever. Its success is sufficiently attested by its results.—*Practitioner, March* 1869, *p.* 129, *and St. George's Hospital Reports, Vol. III*, 1868, *p.* 1.

9.—ON THE USE OF ACONITE AS AN ANTIPHLOGISTIC.

By Dr. Samuel Wilks, Physician to Guy's Hospital.

[Our most potent remedies are doubtless to be found in those drugs whose direct action is on the nervous system,—such are opium and digitalis It is probably in the direction of neuro-pathology that we may expect to make our best advances.]

Physiologists have, of late years, given more special attention to the action of the sympathetic nerve on the blood-vessels; we were formerly content to believe that their sole duty was to rule over the viscera, but experiments prove that, as vaso-motor nerves, they control the blood supply through the arteries of the body, and thus directly affect nutrition. Dilatation of the vessels, and increased temperature, or diminution of temperature, with final atrophy, are now well known to result from experiments made on these nerves. There is thus opened up a new field of inquiry, both in pathology and therapeutics, since the morbid condition of so many organs and tissues may be dependent on an increased supply of blood on the one hand, or a diminished supply on the other.

For example, as in many nervous affections, an exalted or depressed function of the brain or spinal cord might be supposed to be dependent on an increased or diminished blood supply; so those agents which would act on the nerves to influence the vessels, either to contract or dilate them, would be the correct remedies: thus the reason which some practitioners give for the use of belladonna and strychnine. With the same object in view, the theory has suggested to some even a simpler method, and they have thought that, in the application of heat and cold, they could control the blood supply to the various organs, and by these simple agents be in possession of an almost universal remedy for disease. Experience is showing that these are valuable agents, even if they have not fulfilled all the objects which were expected from their use. Hitherto the best remedies have been those which time has proved to be beneficial, and which came into use regardless of any *à priori* consideration as to their *modus operandi*. Amongst the medicines which have a marked and decided control over nervous action, the most striking are opium, quinine, aconite, digitalis, &c. All these have, under peculiar circumstances, a marked effect in controlling inflammatory processes, and the accompanying febrile action.

In a part of the body which is inflamed the blood-vessels are

dilated, but whether this condition is to be regarded as the first stage, or simply as a necessary accompaniment to increased cell growth, according to Virchow, does not much concern the argument therapeutically, since, as a matter of fact, a remedy which acts on the vessels to their contraction, tends to arrest the inflammatory process. Thus the application of nitrate of silver to the eye in conjunctivitis, or to the skin in erysipelas, will contract the vessels and allay the inflammation; also the strapping of a joint or testis will effect the same in a mechanical manner. I suppose it must be admitted that, if an internal remedy could act on the vessels of the conjunctiva in the same way as a local one, to arrest the inflammation, it would be deserving of the name antiphlogistic; and if so, the administration of iron, now a very favourite remedy for erysipelas, if it act by constringing the vessels must be entitled to the same name. At present, I believe, the usual explanation of its beneficial action is, that it improves the condition of the morbid blood.

There would then appear nothing remarkable in the idea of an antiphlogistic remedy, or one that should so act on the nerves, and through them on the blood-vessels, as to actually arrest an inflammatory process. If we remember the remarkable effects which result from the administration of quinine in some febrile disorders, we are led to the conviction that its mode of action must have been in the manner indicated; thus I have as much reason to believe that I have cut short a case of acute rheumatism by this drug, as I have by the use of any of the ordinary remedies. In the same sense, I should say that opium is the most important anti-inflammatory remedy at present known. It never could have maintained its position as a medicine in all forms of inflammation unless this had been its true nature. In various forms of inflammation of the abdomen and chest, it is a remedy almost universally given; and if administered less in affections of the pulmonary mucous membrane, it is only because there is a fear that by lowering the respiratory process it may tend to prevent expectoration; but it is in these very maladies that its effects are most striking. I have seen the case of a child suffering from bronchitis, and supposed to be dying from an over-dose of laudanum, who, from time to time, fetched what appeared to be its last breath, during a most anxious period of two or three hours, and then recovered from the effects of the medicine, and, what was most extraordinary, from the disease at the same time. I have seen a somewhat similar case of croup, where there was a narrow escape of poisoning by opium, and a sudden arrest of the symptoms. How a sore throat or bad cold can be at once checked by a Dover's powder, or dose of laudanum, is in every one's experience; as also, how an ulcer

on the surface of the body will sometimes rapidly heal under the influence of opium. This well-known fact would, it might be thought, have given us a hint as to the controlling power of the drug in nutritive processes. I cannot refrain from mentioning a case which came under my own notice, where the remedy saved the patient's life almost as directly as if he had been snatched out of the river when on the verge of drowning. A friend, seventy-five years of age, was knocked down in the street and struck upon the leg; the skin gave way, ulceration ensued, and in a few days nearly the whole of the limb, from the knee to the ankle, was denuded. He took to his bed, and I visited him to take a final farewell. I found the ulcer still rapidly spreading in all directions, and I was asked to prescribe. I therefore wrote to his medical attendant, stating that, following the footsteps of my old master Mr. Aston Key, I should have ordered in such a case a grain of opium every four hours. This was done, and I heard in a day or two that the old gentleman was better, and when I visited him at the end of another week, I found a most remarkable change had taken place; not only had the ulcerative process stopped, but healing had already commenced. After this, repair went on rapidly, and he was soon able to leave his bed, and continue his out-of-door exercise.

Since, therefore, we see this very evident action of opium on nutritive processes, and as we already know that this drug is of service in various inflammatory processes, we might advance a step further, and infer the possibility of opium being able, in a very large dose, to arrest such a disease as pneumonia at its onset. In speaking of this disease, and some of the usual remedies for it, I am reminded of antimony, which has long had the reputation of being an antiphlogistic. It is one which I still prescribe, and believe that its action is beneficial. It may be supposed, like many other of the metals, to exert a contractile influence over the smaller arteries, and thus, in the same way as lead or iron, tend to arrest hemorrhage.

Amongst other remedies which have had a long-timed reputation, as capable of depressing the heart's action and lowering the circulation, is aconite, but one which has never come into general use on account of its highly poisonous nature, and from want of precise rules as to the class of cases demanding its administration. There have, however, always been some in the profession who have attributed the very highest value to its use; there is nothing remarkable in this, when I know, with such a time-honoured remedy as digitalis, there are many medical men to be found who are ignorant of the indications for its employment; and yet it is a drug which may be put before any others in the Pharmacopœia, as showing the most striking effects from its administration. As regards aconite, I

am acquainted with two medical men who in the course of a long practice have been in the habit of daily using it, but have not cared to speak of it too openly for fear of having their names associated with members of an eminently quack system; and it may be remembered that the late Mr. Liston brought no little odium upon himself on account of his advocacy of the use of this drug in erysipelas.

I myself have been in the habit for some years past of occasionally ordering this remedy, when favourable cases occurred, but unfortunately have preserved no notes of them. As a rule, hospital practice does not afford a good opportunity for the trial of the drug, as it is only at the onset of an inflammatory process that it is likely to be beneficial; it must, therefore, be left to gentlemen in general practice to efficiently put its properties to the test. I will give a few cases where I have a firm conviction that the medicine acted beneficially, and I may add I am still engaged in the trial. Aconite, it may be remembered, has a most powerful depressant influence on the system; in those persons who have accidentally taken a poisonous dose, the heart action has become enfeebled and the pulse very slow; it is supposed, therefore, to have a very direct effect on the circulating system, through nervous ageney: but whether the febrile condition, which is diminished under its use, be due to the simple lowering of the heart's action, or to a more immediate contraction of the blood-vessels, may be a question, but I believe that the latter opinion is the one most usually held.

Pneumonia.—John D., aged 17, admitted into the hospital Dec. 31, 1867. He was a healthy lad, and by employment a groom. Three days before admission he was exposed to wet and cold, when he was seized with a shivering fit and catching pain in the side, followed by great headache and loss of appetite. On admission his appearance at once denoted the malady from which he was suffering; his face was flushed, his breathing quick and catching; and in a high state of fever; pulse 88. At the lower part of the left side the chest was dull on percussion, and there was ægophonic bronchophony. He was ordered to take three drops of tr. aconite every four hours, and to be put on low diet. On the following day, Jan. 1, he was not seen, but on Jan. 2 the change in his appearance was most marked, and it was at once evident that the inflammatory process had ceased; he had regained his natural look; the skin was cool, tongue cleaning, and the pulse at 60. An examination of the chest showed that there had been no advance of the pneumonia, but that the affected part was recovering itself. The medicine was omitted; he made a rapid convalescence, and left the hospital well on Jan. 13.

Acute Rheumatism.—Frances C., aged 15, admitted to the hospital July 17. All the joints swollen, red, and so acutely painful that an accidental jarring of the bed forced her to cry out; and with this all the other usual symptoms of rheumatic fever; pulse 104. She was ordered two drops of the pharmacopœial tincture, every three hours, and to be continued regularly through day and night. This was done, and administered without intermission during the day and night of the 18th, and during the day of the 19th. In the evening she became delirious and so strange in her manner that the house surgeon was sent for, and ordered a placebo. He informed me on the following morning that he believed she was hysterical, and was quite unaware that she was the subject of acute rheumatism, as he found her lying on her side with her arms over her head, screaming out and moving about in a manner which is seldom seen when the joints are inflamed or painful. When I saw her on the following day, I observed a strangeness and restlessness in her manner, and she complained of a burning in her throat and pain in her back, but all traces of the rheumatism was gone. I had no hesitation in attributing the new symptoms to the effects of the remedy. She subsequently had a slight pain in the ankle and wrist, and then rapidly convalesced. She was walking about the ward on August 1.

Acute Rheumatism.—John M., aged 16, admitted Sept. 23. He had been ill three days with febrile disturbance and pains in the limb. I was unable to say whether it was the onset of rheumatism, or merely a "bad cold," which is technically called "febris catarrhalis rheumatica." He had had rheumatism before, and there was present a slight systolic murmur: saline only was ordered. On the 24th he was much worse; he had a sweating skin, with the characteristic rheumatic odour, with pains in all his joints, and pulse 104, temperature 102°, and the case was now clear. He was ordered five drops of tr. aconite every four hours, night and day. I did not see him on the 25th, but on the 26th I was much struck with his altered condition: instead of finding the disease more developed, the pains in the limbs had diminished, and the fever was disappearing; the most striking fact being that the pulse was 64, having been reduced by 40 beats, the temperature 99°. He had taken ten doses of the medicine. I now ordered it to be taken only three times daily. He continued to improve, and on the 28th appeared tolerably well; pulse 60. He then omitted the aconite and continued to convalesce; when, on Oct. 8th, being dissatisfied at taking no medicine, I ordered him some quinine. On Oct. 12th he said he was very unwell, and I then ordered him an aperient. On Oct. 15th I found him in bed with a relapse of the rheumatism, complaining of all the symptoms as on admis-

sion: pains in the joints, hot and sweaty skin; pulse 124. I again ordered the tr. aconite to be taken every four hours. I did not see him on the 16th, but on the 17th all the febrile symptoms were subsiding, and the pulse was down to 80. On the 18th it was 72, when I omitted the medicine. After this he convalesced and left his bed, though he still complained of occasional pain in the knee or wrist. His pulse was now always between 80 and 90.

Whooping Cough (?) and Bronchitis.—Caroline C., aged 20, admitted May 31; had been ailing with a severe cough for two months, and what her medical attendant believed to be pertussis. She had got very thin; had considerable dyspnœa, face dusky, and eyes swollen; had severe paroxysms of coughing, which lasted some minutes, in which she whooped, and followed by the expectoration of a large quantity of purulent phlegm. She occasionally vomited and spat up some blood. I ordered her tr. belladonnæ ℥x every four hours. She gradually became worse, and on June 4 I found her sitting up in bed with much dyspnœa, cheeks and lips livid, mucous râles throughout the chest, tongue furred, pulse 144. I now ordered her tr. aconite ℥iv every four hours. June 5, seemed little better; pulse 140, respiration 37. June 6, decidedly better; pulse 100. On June 8, still improving, although expectorating very much. In a few days the cough less, the patient altogether better; some cascarilla mixture was ordered, and she gradually gained strength and flesh, and left tolerably well at the end of the month.

Chronic Catarrh.—A gentleman came to my house complaining of a bad cold which he had had for two or three weeks, and could not get rid of; he had running from the nose and eyes, with pain over the forehead, as is seen from the effects of the iodide of potassium. He had taken all the ordinary medicines without effect, and therefore I thought it a good case to make trial of the aconite, which I ordered him in ℥ 5 doses every four hours. He called on me three days afterwards, when all the symptoms were subsiding. It is probable that opium might have had the same result.

In giving the above cases I should mention that I have given aconite to other cases without success, but they were scarcely comparable with the foregoing. Those of late were the cases of two women of middle age with subacute rheumatic gout of three weeks' duration, and in which, there being no marked effect, in a few days I omitted it. In a case of pneumonia of one lung the stages were passed through in the usual manner whilst the remedy was being taken, no obvious effect being produced. Also, in a girl who came in desperately ill with acute rheumatism and pericarditis, I gave a few doses, and then thought it right to omit it for more approved remedies. I now regret

this, as the case would have afforded a good example for the trial of the remedy.

In the successful cases I have given above, I should direct attention more especially to the first three, where I cannot but doubt of the efficacy of the remedy, seeing that, besides the subsidence of the disease which was being treated, there was such a marked influence on the pulse. This cannot be accounted for except by the action of the remedy. Their publication cannot at present prove much, but they tend to corroborate the opinion of those who have used aconite beneficially, and may tend to further its employment in the hands of others.—*Practitioner, Dec.* 1868, *p.* 330.

10.—ON THE EFFECTS OF REMEDIES UPON UNCOMPLICATED ACUTE RHEUMATISM.

By Dr. W. H. Dickinson, Senior Assistant Physician to St. George's Hospital.

[The following paper is the sequel to some tables which very fully record the result of treatment upon a considerable number of cases of acute rheumatism.]

The tables supply the following facts:—161 cases of acute rheumatism, as yet without evidence of cardiac affection, were admitted. In 36 of these, heart complications arose while the patients were under treatment. These complications, though more frequent early than late in the disease, were found to have come on at all times during the first four weeks of the rheumatism. The cardiac disturbance was found in the first week of the disease in 12 cases; in the second in 9; in the third in 5; in the fourth in 3. In 7 cases the date of the murmur was uncertain.

These statements cannot in strictness be looked upon as contributing to the "natural history" of rheumatism, for all the patients were subjected to therapeutical measures, and some to measures which, there is reason to believe, conferred such protection upon the heart as to reduce the proportion of cardiac affection.

A nearer approach to the natural proportion of cardiac disturbance would probably be obtained by excluding all the cases subjected to alkaline treatment. This would give 35 cases of heart affection coming on in hospital among 110 of rheumatism.

The chief object, however, of this communication is to examine into the frequency of cardiac mischief in relation to different methods of treatment.

Of the 161 cases of rheumatism, 48 were subjected to the alkaline treatment—that is, to the daily administration of

between half an ounce and an ounce and a half of the carbonates and vegetable salts of potash and soda. Three cases were treated with salts of ammonia. 110 cases were treated by various means, other than the full alkaline system, including blood-letting, mercury, nitre, guaiacum, opium, iodide of potassium, quinine, and such small doses of the alkaline salts as are described as "partial" or come under the designation of salines.

Among the 48 patients under alkalies one case of heart affection was recorded; among the 3 under ammonia, none; among the 110 under treatment other than alkaline were recorded 35.

Thus the alkaline treatment gave a proportion of heart disease of 1 in 48; non-alkaline treatment a proportion of heart disease of more than 1 in 4. The number of cases is large enough to afford a weighty deduction.

It is, of course, not unlikely, as the notes which the tables represent were taken for the most part in the ordinary course of hospital work, that a slight or transient murmur may now and then have been overlooked; but this source of error must have affected alike all modes of treatment. With the evidence before us it is not possible to question that, as compared with the other methods in use at the same time, the alkaline system gave a much smaller proportion of cardiac disease.

It will be observed that under alkalies the duration of the disease was shorter than under most other plans, a point, however of little importance as compared with the safety of the heart.

It is not necessary to consider other remedies; venesection and mercury are practically abandoned in acute rheumatism. Next to the alkalies, nitre appears to give the best results. With regard to the other drugs which are represented in the table, we can trace no advantage from their administration, and need not too precisely inquire whether they are mischievous or merely useless.

With regard to Dr. Davies's blistering system—a method of treatment of which the tables give no example,—from clinical evidence as well as the theoretical probability of the withdrawal, by this means, of a rheumatic poison, we may believe it to be attended with advantage. On the other hand it is inconvenient to the patient, and probably does not protect the heart to the same extent as can be claimed for alkaline medicines.

It does not seem that any method of treatment which has yet been invented is able entirely to do away with the tendency which acute rheumatism has to affect the lining and covering membranes of the heart. Of late years, alkalies in some form have been almost invariably used at St. George's in cases of this

disease; thus a much larger number of cases have every year been subjected to this treatment than was formerly the case. Dr. Reginald Thompson, the present medical registrar, has collected a considerable number of cases both of endocarditis and pericarditis, under alkalies; but it is not necessary to dwell upon this fact, since, as no other method of treatment has been employed to any extent during the same period, we have no means of comparing these cases with others under different circumstances. Though it must be allowed that heart complications occur occasionally under alkalies, the conclusion may fairly be drawn that, as compared with other modes of treatment, alkalies give the best results.

It may not be out of place to refer to the experience of Dr. Fuller, who was the early, and has been the persistent, advocate of the alkaline treatment. He states that among 168 cases of acute rheumatism, the heart became involved, subsequent to the commencement of the treatment, in only five.

Whether alkalies give better results than mint water, or what is called expectancy, is a question to which the details I have given supply no answer. If the proportion of cardiac disturbance which occurred (as shown in the tables) under treatment other than alkaline be allowed to approximate to that which would have taken place had nothing been done, we may see something of the results of expectancy in the non-alkaline cases. Some of the methods of treatment were apparently harmless; we may perhaps believe that under their influence the disease was not materially aggravated, and did not produce more than its natural proportion of cardiac disease. And if the proportion of cardiac disease natural to acute rheumatism is at all like what occurred in the non-alkaline cases, we must believe that alkalies reduce the proportion of cardiac disease which belongs to unmedicated acute rheumatism. With this conclusion I should myself be most unwilling to withhold the use of alkalies in any suitable case. Those cases may be regarded as suitable where there is free generation of acid.

A few words of practical suggestion may form a not unwelcome conclusion.

In order to obtain the best results from the alkaline treatment of rheumatism, it is necessary that it should be regulated with a watchful care. In the beginning of the disease, when there is rapid production of acid, the alkalies should be given freely, and, above all, frequently. Taking the urine as a guide, it should be made alkaline as soon as possible, and kept so with no intervals of acidity. To do this, the salts must be given at first in considerable doses, and at short intervals; three or four scruples every two or three hours, as ordinary treatment for an adult. As the disease progresses, and the acid tendencies of

the patient diminish, it is necessary to lessen the strength and the frequency of the medicine in a gradual manner, with continual reference to the urine, guarding against excess of alkali towards the end of the disease as carefully as against deficiency at the beginning.

It appears to matter little whether potass or soda, vegetable salts or carbonates, are used. Citrate of potass may be given alone, or with acetate or bicarbonate. Nitre and acetate of ammonia are, at St. George's, not unfrequently used as adjuncts. The form of prescription may be safely varied according to the circumstances of each case and the fancy of the practitioner. Perhaps a simple solution of citrate of potass in water is as effective and as little objectionable as anything. This salt, or its equivalent, may be given in the general quantity of about an ounce in the twenty-four hours; rather more at the beginning of the disease, less towards the close. In most cases quinine or bark may with advantage be added as the active symptoms wane.—*Lancet, Feb.* 20, 1869, *p.* 254.

11.—ON THE CAUSE OF SCURVY, AND THE ACTION OF THE DIFFERENT SO-CALLED ANTISCORBUTICS.

By Dr. Archer Farr.

There have been many speculations with regard to the cause of scurvy: one authority affirming that it is owing to the absence of vegetables in the food taken; another maintaining that a deficiency of the salts of potash is the cause; while a third gives it as his opinion that it results from bad ventilation, deficient water-supply, wet seats, &c.,—all of which fail to explain the real cause of the disease. That scurvy is not owing to a deficiency of the salts of potash in the food of the sailor, and that salt meat contains all the elements necessary for nutrition, have been proved beyond doubt; while that the belief that fresh succulent vegetables or lime-juice are indispensably necessary to the cure of the disorder is an error, is proved by the fact that beef-tea and milk will effect a cure in the absence of both. If salt meat contains all the elements required for nutrition, how does it produce scurvy? Purely by its hard and indigestible nature as food, and its inability, from its resistance to peptic change, to supply for any length of time all the conditions necessary for proper digestion. Added to this is man's natural aversion to the continued use of one, and only one, kind of food for any length of time.

Physiology teaches us that the gastric fluid is secreted only in the presence of food; but that it ceases to be secreted, although food be present in the stomach, as soon as the wants

of the system are satisfied. Now, what takes place during digestion where the only food employed consists of salt meat—sometimes of the consistence of buckhorn—and dry biscuit? The food remains in the stomach probably five or six hours, while the wants of the system continue unsatisfied. All this time the stomach is being excited to secretion, while the gastric juice, from this exhausting secretory action, becomes deteriorated in quality, or in the end, perhaps, deficient in quantity; and the result is that the whole digestive process is brought to a standstill. Scurvy, therefore, is the result of mal-nutrition. But we know that if lime-juice or vegetables be added to the staple fare of salt meat and biscuit, scurvy may be prevented. And the prophylactic power of the lime-juice does not, as is generally supposed, depend upon its having any direct action upon the blood, but upon its immediate action on the contents of the stomach, by serving as the agent by which these hard ingesta become reduced and rendered fit for absorption—in fact, by taking the place of the gastric fluid. Now, what facts have we to strengthen this hypothesis? In the first place, that the solvent power of the gastric fluid depends, for the most part, upon the acid it contains, it having been found to yield, on analysis, hydrochloric, acetic, lactic, malic, and phosphoric acids; one being capable of taking the place of the other. Hence it is that the acid wines and vinegar become antiscorbutics. Secondly, that the solvent effect of the different acids upon the fibrin of meat is well known, and is taken advantage of in making analysis of the contents of the different viscera in medico-legal investigations. We learn by experience that saur-kraut, spruce-beer, oranges, lemons, and their juices, and all kinds of esculent fruits and vegetables, possess more or less so-called antiscorbutic properties; also, that the acid wines, vinegar, brandy, molasses, pickles, and sauces tend greatly to prevent the occurrence of scurvy—indeed, it would be difficult to name anything contained in the category of eatables and drinkables which does not possess, to a greater or less degree, some anti-scorbutic value. Now, it must be patent to all who possess the smallest knowledge of chemistry, that if vinegar and brandy serve at all to prevent the disease, it cannot be owing to the salts of potash they contain; while it is equally certain that they must operate in a manner quite different from that in which potatoes and green vegetables effect a cure. The juice of the lime and lemon, acid wines, beer and vinegar, act by virtue of their solvent effect upon the food contained in the stomach; whereas alcohol can only act through the medium of the circulatory system. The secret of vegetables and fruits being so potent as antiscorbutics is this:—The alimentary canal may be very appropriately termed a double organ, inasmuch as the

animal food is digested by the stomach, and the vegetables by the intestines. Hence man has two distinct appetites, one for each kind of food—the animal and vegetable. He may eat to repletion of the one kind, and then partake heartily of the other. Is it not fair to assume, then, that, in the case of the scorbutic patient whose stomach digestion has been most imperfect, the intestines, which for weeks have been almost wholly unemployed, should, upon the accession of vegetable food, play an active part in supplying the necessary nutritive material to the system? Scurvy is to be prevented, then, in two ways: either by employing the stomach better, or by giving the intestines more to do.

Food should be so constituted as to contain within it the materials from which may be drawn all the primary elements of the blood; and no one kind of food is so rich in these as flesh, the fibrinous portions being the most essential. It is true that wherever scurvy has happened, whether on land or sea, it has always been in the absence of vegetable food; but what other condition is there that strikes one? That the fibrinous and albuminous portions have *always* been deficient in the *materia alimentaria* supplied, or they have been presented in such a form as not to admit of their being, for any length of time, properly and effectually reduced; the latter being the case where salt meat has been the cause, and the former where bread, tea, coffee, bacon, cheese, &c., have formed the diet under which an outbreak of scurvy has taken place. We have sufficient proof that the fibrinous and albuminous principles play a most important part in eradicating scurvy in the fact that vegetables will sooner effect a cure when combined with salt meat than when administered alone, and still quicker conduce to such result when taken in conjunction with fresh meat. And again, a healthy, growing youth with craving appetite, whose stomach is equal to any emergency in the way of food, will outlive a much longer voyage on salt meat and biscuit than the man in middle life with fastidious stomach; although in the case of the youth the demands of the system for food are greater, in order to supply the wants of a growing frame. What stronger arguments can be adduced in favour of my theory? What greater proof can we have, in opposition to the prevailing opinion, that vegetables are chemically antiscorbutic —that they supply a something which meat does not possess, and which the body requires? The four varieties of food necessary for the maintenance of nutrition are represented in bread and butter, and how commonly do we see well-nourished, blooming children living almost exclusively upon it. But the fibrinous and albuminous principles contained therein being proportionately very small, it would fail to supply the neces-

sary muscle-making material were it not for the child's astonishing capacity for consuming its own weight of such food in a comparatively short time. The adult in attempting to live exclusively upon bread and butter would find that he could not eat sufficient to sustain him. And hence it is that children will thrive under the same conditions that infallibly conduce to scurvy in the adult. It is remarkable that the many different authors writing upon this subject should not have observed this.

The great desideratum, then, in catering for the mercantile marine, with a view to prevent the occurrence of scurvy, should be that the sailor be provided with good flesh-food; and since salt meat must of necessity always form the basis of his dietary, every care should be taken that it be of recent pickle, bad salt meat being too commonly the cause of the disorder. Nothing would tend more to stamp out scurvy from our seas than Government making it compulsory on ship-owners not to ship their meat-supply as salt meat, but compel them to take it in as fresh meat, and thus ensure its being laid down in the brine within a week of the vessel's sailing. This plan could not fail to secure to the sailor a supply of wholesome meat, whereas as the law stands, he may have palmed upon him the vilest trash, the pickle-tub being made the receptacle of all that is loathsome. The carcase once in the brine, there is an end to all history as to its mode of death; neither do we know how long it may have been "sepulchred below;" and consequently many a ship is sent to sea with scurvy in the tub.—*Lancet, March* 27, 1869, *p.* 424.

12.—ON THE TREATMENT OF CANCER BY ARSENICAL MUCILAGE.

By Dr. Alexander Marsden, Surgeon to the Cancer Hospital, London and Brompton, and to the Royal Free Hospital.

The arsenical mucilage mode of treatment is applicable to all forms of cancer, except the cystic or colloid, provided they have not exceeded certain limits, viz., four square inches, and then not more than a fourth must be attacked at once. When a cancer has exceeded this limit, I know of no means that ought to be used to extirpate it but the knife; and it must not be supposed because I so strongly recommend the arsenical mucilage, that I would discard the use of this instrument altogether; for in some cases it is our only hope.

The paste may be applied to cancers situated on any part of the body except inside the mouth or nose, parts, in fact, where the use of the curative agent would be dangerous. I do not

recommend its use when the disease is deeply seated, but for many cancers on or near the surface, this mucilage is the least painful and the most certain remedy I know. During the last seventeen years I have fully tried every known caustic, and now firmly believe that this is the best.

The application of arsenious acid is not new; it has been used in various ways and compounds, but hitherto such success has not attended its use, as to make it appreciated as it ought to be. The mode I adopt is as follows. A thick paste of arsenic is made according to the following formula—

Arsenious acid, ℥ ij.
Mucilage of gum acacia, ℥j.

To be well mixed together, and made into a thick paste.

The patient's health having been attended to, the whole of the cancerous surface is to be spread over with this paste, provided it is not more than a square inch, and it must be sufficiently thick not to run; a piece of dry lint is then pressed on to it, overlapping the paste half an inch all round; this must be left for a short period, say ten minutes, by which time any superabundant paste will have been taken up by the extra lint, which is then to be carefully cut away with a sharp pair of scissors; in an hour, or at most two, the lint covering the paste will have become dry and hard, and it will adhere closely and firmly to the cancer. In the course of twenty-four hours the surrounding parts will commence to swell, become red, and to a certain extent inflamed, and the patient will experience a drawing pain. In general this is by no means severe, and does not last more than one or two days. At the expiration of from forty-eight hours to three days, according to circumstances, bread-and-water poultices are to be constantly applied and changed every two or three hours; the pain, redness, and swelling will by this time have subsided, and a distinct line of demarcation be seen extending entirely around the cancerous mass; the skin ulcerates, and a fissure is formed, separating the slough from the healthy tissues; the fissure continues to deepen, until the entire cancer comes away, leaving a healthy cup-like depression, varying in size and depth according to the mass removed. Healthy granulation will now commence and it will be well to continue the poultices for some time; indeed it often happens that no other application need be used. Of course we must be guided by circumstances, for granulation proceeding too rapidly, too slowly, or in any abnormal manner, must be treated according to the known rules of surgery. Great diversity will be found as to the time of the slough coming away, in cases of small extent and not extending deeply into the tissues, the periods will vary from six to fifteen days, but in those of greater size, from twelve to thirty. In some instances only one application of the

paste will be necessary, but it will in general be found advisable to apply it every second or third morning, till the desired effect is produced; no rules can be laid down as to how often this must be done; the experience of the surgeon and the progress made must decide. When it is intended to re-apply the paste, the former piece of lint must be carefully soaked for some time with warm (not hot) water, and after it has come away, the mucilage be used as before, recollecting that until the last application that is intended has been made, poultices as a *rule* are not to be used, unless under special circumstances; and that after a decided line of demarcation has been formed, no more paste is to be applied. In general it will be found that after the slough has come away, the whole of the disease has been removed; but sometimes this will not be the case, and then the mucilage must again be had recourse to; in others it will be found desirable to remove a portion of the dead cancer before another application of the paste. This, however, is only necessary when the cancer becomes hard and callous, and will not allow it to penetrate. I have also used this remedy in some cases after operation by other means. For example, not very long ago, a gentleman applied to me; he was suffering from a pedunculated epithelial cancer, situated below and a little behind the right ear, quite of a mushroom shape. The broad flat part was four inches and a half in circumference, half an inch thick, and grew on a stem less than three quarters of an inch in diameter. It was removed in a moment with a noose of silver wire, but the root still remained; one application of the paste brought this perfectly away in eight days, and a fortnight after the patient was well. Neither the knife or ecraseur could, I think, have accomplished this, and no other caustic would have performed the task so cleanly and satisfactorily. One of the most pleasing and wonderful phenomenon connected with the mucilage is the extraordinary power of election it appears to possess; for if put on with only ordinary care, the cancer alone is attacked, the healthy structures remaining untouched, and the disease ultimately rolling out of a perfectly healthy wound.

This treatment I have used with equal success in cancer on the lip, face, head, arm, hand, abdomen, breast, penis, testicle, labium, scrotum, and foot. I have never seen any bad results from its use, except in one case, and in this the evil was temporary only, and occurred in one of our earlier cases, some years since. At the same time I must caution those who are inexperienced in its use, that it is a dangerous remedy in unskilful hands, and requires constant watching; neither can it be used, as I before stated, to cancerons surfaces of greater extent than four square inches, and then only a small portion must be attacked.

Many cases of scirrhus and medullary cancer are amenable to this treatment, particularly at an early stage, but to the epithelial it is peculiarly adapted. It is true that this form of cancer is frequently found to attack the tongue; and that except in the earlier stages of the disease, carcinoma of this organ presents to the surgeon a truly difficult task; but on other parts of the body we have this variety under very great control. I may say that a patient suffering from epithelial cancer, coming under treatment at anything like a reasonable time from the first attack, may, in nine cases out of ten, feel sure of a perfect restoration to health; such was not the case ten years ago. This reassuring fact becomes more valuable when we consider that of all the forms of cancer, about one in four is epithelial.—*Marsden on Cancer, p.* 60.

13.—ON THE PATHOLOGY OF FATTY DEGENERATION.

By Dr. Edward Latham Ormerod.

The pathology of fatty degeneration may be summed up in a few lines. And, as a preliminary, I must confess that a very attentive study of fatty degeneration continued through many years has much diminished, in my eyes, the importance of the specific character from which the process takes its name. Grave as are the diseases with which it is connected and on which it ensues, the fatty change itself is comparatively of little moment, and quite secondary to the degeneration, in date as well as in importance.

It is an infiltration of fatty matter which is derived immediately from the passing blood, or is made on the spot under its influence. And, as far as concerns the human subject, it is not the physiological form of fat, margarine, which is thus infiltrated, but oleine.

The structures which are infiltrated in this manner must be previously disorganised, the infiltration being a consequence, not a cause, of the disorganisation. Structures in healthy vital activity either do not admit of such infiltration; or, where their physiological constitution allows of this, they have the power of clearing themselves of the oil. They must be disorganised, but they must not be dead, as far as death implies liability to chemical decomposition or disconnection with the current of the circulation. For, experiments show that, under such circumstances, fatty degeneration, as expressed by the formal replacement of healthy structure by fatty matter, never ensues.—*St. Bartholomew's Hospital Reports, Vol. IV.*, 1868, *p.* 67.

DISEASES OF THE NERVOUS SYSTEM.

14.—ON HYSTERIA.

By Dr. Samuel Wilks, Physician to, and Lecturer on the Practice of Medicine at, Guy's Hospital.

As in hysteria the nervous system is deranged, so every part of the body may suffer—the function of every organ may be disturbed, as well as the nerves themselves disordered in all possible manners. Let us look to some of these irregularities. First, the nervous system proper may suffer.

The motor system may be depressed or excited; thus paralysis is a very common hysterical symptom, affecting more especially the lower limbs. A leg cannot be moved, or both legs are the subject of paraplegia. As, in such cases, the cause is want of nervous energy, so you will perceive the peculiarity of these cases—that rousing of the will is often sufficient to put fresh vigour into the system and cure the complaint. A sudden alarm has often cured the patient who has been considered as hopelessly paralysed, and this gives us an insight into the correct treatment. I need not dwell further on this subject, as I have already on more than one occasion shown you the importance of the moral treatment of hysteria. A young lady has a complaint of an imaginary kind, and you visit her daily, and treat it as if it were a reality; the consequence is that it is perpetuated, and you have assisted in making it a perpetuity. You understand the real seat of the complaint—you attack that, and cure your patient. When I have had under my care here cases of paraplegia of years' duration, most assiduously treated by medicine, and at length cured by moral means, I cannot speak too highly of the method. These cases are not often difficult to diagnose, since in a real paraplegia the patient grows thin, bedsores appear, paralysis of the bladder and rectum may be present, and the patient feels ill, whilst in the case of hysterical paraplegia the patient remains plump; there is no trouble with the bladder, or if any, it is retention of urine; the abdomen is tympanitic, bowels confined. The physiognomy of the patient and her surroundings sufficiently indicate the nature of the case. She has taken to her bed as if for the remainder of her days, and all is arranged accordingly—the stitching, the embroidery, the religious books where they can be comfortably reached, and she generally receives more sympathy from the clergyman and the lady visitors than do cases of real illness. The fact is that there are no painful and loathsome circumstances attending her case, and, from her conversation and industry with her hands, it is regarded as an "interesting" one.

Then, besides loss of motion, there is perversion of motion, and we witness sometimes, as a result of hysteria, some of the strangest movements which you can conceive. These are not of that irregular kind which we witness in chorea, but are usually of a rhythmical character; thus, instead of the body or arms being constantly writhed about in various directions they are more slowly or regularly bent in a given manner. Thus a girl was in the clinical ward two years ago who sat in a chair, and was constantly bending or bowing forward, as if saluting all those present. This continued for several months before she got better. In this case, as in all others, the greatest discomfort was produced by the use of any forcible means to restrain the movements; the cause lies in the centres within, and no approach to a cure is produced by attacking the effect. In several other cases the arm is in constant and regular motion, as if acted on by clockwork. This form has received the name of malleation. I remember a case of Dr. Barlow's where the woman had constant quick breathing, and, what is remarkable, every inspiration occurred with a beat of the heart. This continued for weeks. I have quite lately been visiting a child who has died with this form of hysteria. After having various strange symptoms for some months, she took to sitting at the side of the bed, and having some person or object before her which she could continually keep thumping with her fists or head all day long. Any restraint only added to the irritation. Chloroform, opium, conium, and other remedies, in large doses, produced only a temporary effect, and she at last died utterly exhausted, and wasted almost to a skeleton. There was no disease found in the brain.

Then, again, we meet with permanent spasm as an hysteric symptom, seen more especially in the hand, which is firmly clenched, the tendons becoming rigid and the muscles contracted when the hand is forcibly opened. Then, again, the whole body may be affected after the manner of tetanus. This is more often seen in an acute attack of hysteria, but the lockjaw may remain as a very troublesome and constant symptom. I draw your attention to the fact, for it requires often all our acumen in order to distinguish a real disease from an hysteric one. Then also you may have that remarkable condition known as catalepsy. This in its purity is not very common, although I have seen two cases of it in the Hospital. One of my patients would sink into a kind of swoon or deep sleep, during which condition she would stand perfectly still in the middle of the ward, or, if in bed, would remain in any position in which you chose to place the body. Minor degrees of the cataleptic state are frequently met with, and not uncommonly in the epileptic of both sexes, especially after the occurrence of a fit. During

the drowsy stage which follows you will frequently find that the patient's limbs will remain in any posture in which you place them. You will observe, in fact, that the whole nervous system is deranged in hysteria. You will have evidence of irritation of the cerebro-spinal system in the movements I have mentioned, and in the strange mental vagaries; then also of the deadening of the centres, as seen in the paraplegia and in this disposition to lethargy. We are sometimes called in to a person lying perfectly insensible, and apparently as if near her end, but it is a mere phase of hysteria. An extreme form of this condition, when continued, is usually styled trance. The whole nervous system may be so lowered in tone that the person lies helpless and insensible, but the functions of life slowly go on. This state may last for a great length of time.

Then as regards the nerves of sensation, it may be said that invariably these are in some way altered in hysteria. More commonly there is hyperæsthesia of some of the senses. The patient cannot bear the light, or the least sound troubles her, but more usually it is the common sensation which is affected. Thus, sometimes no part of the body can be touched without the patient shrinking—I mean the body proper, as the chest and abdomen. Often it is some particular part, the more usual spots being those which are tender in many persons when their "nerves are low," as the middle dorsal vertebræ, the vertex, and the left side. You will find many nervous persons flinch when you touch them in these places. Then there may be some particular spot to which the whole attention of the patient is directed until that place is believed by her to be the seat of actual disease; I allude to the hysterical breast of Astley Cooper and the hysterical joint of Brodie. It is not always that the patient complains of pain, but an exquisite tenderness when the part is touched.

Then, again, there is the opposite condition of anæsthesia, where, owing generally to some violent commotion of the nervous system, the sensorium is thrown into a lethargic state, and the senses are sealed. A girl to whom I was once called received a great fright, had an hysteric attack, and fell into a state of lethargy; during this time she appeared to have lost altogether the sense of touch. The absence of sense of pain whilst that of touch remains I have already referred to, and is very commonly met with in hysteric women.

Now, besides this hyperæsthesia or oversensitiveness, our hysteric patients complain of and suffer pain. You must not think, because your patient is hysterical, that she does not feel pain, for assuredly the suffering of many hysteric women is real. There has been, and still is, much controversy as to the seat and cause of these pains. Are they merely subjective, and

due, as is the hyperæsthesia, to a morbid sensibility of the sensorium, or have they a local seat? and, if the latter, are they situated in the nerve and neuralgic, or in the muscle and myalgic? We have had writers who have contended strongly for one view or the other, but in all probability both are correct. I think, however, we are much indebted to those Physicians whom I have before mentioned who have directed attention to the frequent existence of myalgic or myosalgic pains. Thus, the pains in the side and in the head so frequently met with are said to be muscular, and more especially the pains which occur in the chest or abdomen. Two good cases of the kind I now have under my care in Mary Ward. The one a young girl who lies in bed or sits in a chair, leaning forward, complaining of great pain at the epigastrium. She cannot bear it touched, and says she feels as if a load were oppressing her, and which will presently suffocate her. She is sometimes so bad that her mother thinks she will die, but at the same time she is well developed, stout, and has apparently no real disease upon her. The other case is that of a woman well known to all students on account of the trouble which she has imposed upon them. Before she came under me she was in charge of one of my colleagues for several months. Her complaint is a most excruciating pain at the left side of the abdomen, which draws her double, and which hitherto has not succumbed to the medicines which have been taken in vast quantities. The only relief she has obtained has been by the subcutaneous injections of morphia, which have now been practised for many months. The woman is in good condition, and does not look as if she suffered from any organic disease. On examination of the abdomen, the left side is full, rather rigid, and highly sensitive when touched. She complains, when the paroxysm of pain is on, of a most distressing bearing down and irritability of the bladder. She stated that she had passed blood in her water, and thus the case was treated as one of calculus of the kidney and ureter. At the present time opinions are divided between this diagnosis and one of hysteria, where the pain is due to a spasm of the abdominal muscle. My own opinion inclines to the latter view, perhaps being somewhat prejudiced by the fact that the great master Sydenham takes such a case as illustrative of one of the forms of hysteria, and which I will read :—"When this disease seizes one of the kidneys, it plainly represents, by the pain it causes there, a fit of the stone, and not only by that sort of pain and by the place it rages in, but also by violent vomitings which accompany it, and also for that the pain sometimes extends itself through the passage of the ureter; so that it is very hard to know whether these symptoms proceed from the stone or from some hysterick diseases, unless perchance some unlucky

accident disturbing the woman's mind a little before she was taken ill, or the vomiting up of green matter, shows that the symptoms rather proceed from an hysterick disease than from the stone. Neither is the bladder free from this false symptom, for it not only produces pain there, but it also stops the urine just as if there were a stone, whereas there is none. But this last kind seizing the bladder, happens very seldom, but that which resembles the stone in the kidneys is not so rare."

Then, besides hysterical pains, we have disturbances of all the various organs of the body. Palpitation of the heart is very frequent. Then the breathing may be affected, and we have a kind of nervous asthma. The larynx may be affected; at one time there is a want of power to articulate, and neurophonia is one of the commonest symptoms of the hysteric condition. At another time the larynx is over-sensitive, and we have that troublesome and most annoying symptom, the hysteric cough. Some, however, have considered this due to a kind of chorea or spasm of the diaphragm. You may recognise it by the loud hollow or barking character, want of expectoration and any evidence of disease of the chest, or, to give the description in the words of Sydenham, which is both precise and accurate:—"Sometimes it (the hysterick disease) seizes the lungs, and the patient coughs almost without intermission, but expectorates nothing; and though this sort of cough does not shake the breast so violently as that which is convulsive, yet the explosions are much more frequent."

Sickness is one of the most troublesome and obstinate of all hysteric disorders, because the organ having got into the bad habit of discharging its contents upwards can with difficulty be broken of it. It is remarkable that in these cases of daily vomiting the characteristic of the hysteric condition, the plumpness or absence of emaciation, still persists. One mode by which we diagnose such cases as hysteric is that no medicine is of any avail; in real disease, even in such organic maladies as cancer, our ordinary remedies afford relief, but here the cure must be attempted through the nervous system. I believe the best method is to starve the patient for a while, or to use injections, so as to preserve the stomach in absolute quiet for some days, and then to commence with the smallest quantities of food.

The bowels, again, are, to use Sydenham's expression, seized upon by hysteria. Thus, prolonged and obstinate constipation is a not uncommon phase of the disease. This is only to be cured by the medical man having his patient well in hand, and by letting her know that he is quite aware of the want of importance of her malady. The regular plan is for such a patient, like others of the kind, to be taken from doctor to doctor, who write the usual prescriptions, and with the usual result. The

influence which can be produced on hysterical patients by physicians and attendants is well seen by some of the cures which occur under the direction of one of our "sisters," who introduces herself to her patients with "No nerves in Esther Ward."

As regards the nervous influence on the kidneys in the production of a large amount of water, the fact is one of importance in a diagnostic point of view. Sydenham says:—"Among all the symptoms which accompany the disease this is the most proper and almost inseparable—viz., a urine as clear as rock-water, and this hysterick women evacuate plentifully, which I find by diligent inquiry, is in almost all the pathognomonick sign of this disease, which we call hysterick in women and hypochondriack in men; and I have sometimes observed in men that presently after making water of a citron colour (yea, almost the next moment), being suddenly seized with some violent perturbation of the mind, they presently void water as clear as crystal, and in great quantity. Three years ago a nobleman sent for me who seemed to be suffering from an hypochondriack colick. Visiting him one day, I looked upon his urine, which was of a citron colour. He was then merry and cheerful, and said he had a craving appetite; but one coming in at that very moment vexed him so much that suddenly being taken ill he called for a chamber-pot, which he almost filled with urine as clear as crystal."

Indeed, if I were to detail all the disturbances to which the body is liable in hysteria, I might occupy you for a month, or, to quote Sydenham once more, "Nor is this disease only frequent, but so strangely various, that it resembles almost all the diseases poor mortals are inclinable to. For, in whatever part it seats itself, it presently produces such symptoms as belong to it, and unless the physician is very skilful he will be mistaken, and think those symptoms come from some essential distemper of this or that part, and not from any hysterick disease."

I can scarcely tell you how to treat these people. Occupation and diversion for the mind are no doubt the most essential elements in any treatment, but they are just those which you cannot enforce. The worst part of the therapeutical system is this, that not only will the patient not take your advice, but by prescribing for him you are assisting in perpetuating his illness. You might think that a patient who was always ailing and got no relief would not trouble medical men any further, but it is very remarkable that it is that very man who takes our physic. He will sit down and tell you of the number of medical men he has seen, and show you a bundle of prescriptions, declaring that they have done him no good, and yet he will ask for another.—*Medical Times and Gazette, March* 27, 1869, *p.* 323.

15.—ON MURIATE OF AMMONIA AS A REMEDY FOR SOME NERVOUS DISORDERS.

By Dr. Francis E. Anstie, Editor of "The Practitioner."

[Few agents have more decided and reliable therapeutic properties than has muriate of ammonia. The apathy with which it is regarded in England contrasts singularly with the varied uses to which it is applied by German physicians. It has the reputation in Germany of being a uniform stimulant of all the secretions. Dr. Anstie has had considerable clinical experience of its employment for the relief of various kinds of pain; and of certain cases of suspended secretion dependent on nervous exhaustion.]

The anodyne action of muriate of ammonia has not been so neglected as it is for want of empirical observations, by various authors, sufficiently striking to have arrested attention. The practical unfruitfulness of these observations must be laid chiefly to the blame of the mischievous metaphysical conception of pain as a mode of *heightened vital energy*, which rendered it difficult for the popular intelligence to understand the applicability of ammonia—usually considered a stimulant *par excellence*—as an anodyne. So widely prevalent, even now, is this fundamental misconception, that nothing but stubborn facts in large array can break it down. Fortuately such facts can be produced in any number, and, in the case of muriate of ammonia, they have presented themselves to me in overwhelming force.

Foremost in the list of painful affections for which the muriate is useful are the group of disorders now classed under the term Myalgia, which was invented by Dr. Inman. The out-patient clinic of a hospital presents an excellent field for the study of these affections, and at Westminster they present themselves in very large numbers. The general type is that of aching pains felt in muscles which are habitually overworked in proportion to their nutrition; such pains are naturally commonest in laborious and ill-fed persons. The most exquisite examples are, perhaps, seen in shoemakers and sempstresses, who, (often with insufficient food) work many hours a day in cramped positions which keep certain muscles of the trunk in a permanently contracted state. Myalgia of the intercostals, and of the recti abdominales, frequently attacks these persons with great severity. Theoretically, of course, the one all-paramount indication of treatment should be *rest* to the overworn muscles. Practically, this is often impossible, and some other remedy has to be found. I have tried all manner of remedies to this end, and have come to the conclusion that nothing in the whole list of them comes near to muriate of ammonia in efficiency. Several authors have spoken favourably of its action in myalgia.

I give it in doses varying from ten to twenty grains, and can say that not even quinine in ague is a more reliable agent than the muriate in myalgia. Of course it quite fails in a certain percentage of cases ; and of course, in a still larger percentage, the hostile influences balk a perfect cure. But the total or partial failure of quinine in intermittents is quite as frequent an occurrence.

The neuralgias proper require a special classification in relation to their amenability to the muriate. First on the list, by very much, stand *migraine* (or one-sided headache, ending, if it lasts long enough, in vomiting) and so-called *clavus hystericus*. In estimating the value of any remedy for neuralgias like migraine and clavus, it is necessary to take into account the history of those affections and the place they occcupy in pathology. The unfortunate term "sick-headache" popularly applied to the one, and the equally luckless adjective "hysterical" employed in speaking of the other, for a long time fatally confused the subject. They brought about this result, namely, that the pain in the head, in each case, was tacitly considered as merely secondary to some other affection—of the stomach in the one case, of the sexual organs in the other—instead of being recognised as what they certainly are, distinct and primary neuralgias of the fifth cranial nerve, of a kind which belongs *especially to the period of bodily development*. Hence migraine and clavus have, time out of mind, been made the occasion for every description of meddlesome and useless, and often actively mischievous, medication, directed to the removal of a "biliousness," or an imginary "hysteria." The distinct recognition of these kinds of headache, as the *facial neuralgias of the young*, clears our way towards a frankly neurotic treatment of them ; and under these circumstances, in accordance with the principles now coming into general adoption, the following lines of treatment lie before us. There is the improvement of nutrition of the nervous system by various means ; an object of special importance in neuralgias which are connected with the period of bodily growth. There is the employment of counter-irritation ; a matter which is of less importance in this case than in that of other neu algias : and finally, there is the employment of a variety of internal remedies which produce visibly direct and rapid effects upon the nervous system.

Among the latter class of agents there is every variety of applicability to the treatment of different neuralgias. Migraine and clavus rank decidedly among the milder varieties of neuralgic pain ; that is to say, they are not in themselves either so intolerable or incurable as many others. They are distressing enough while they last, but the attacks usually tend to spon-

taneous termination, or at least great remission by the occurrence of sleep. Of agents which directly affect the nervous system, therefore, it would seem probable that the mildly stimulant class, which tend simply to restore interrupted function to its natural level, would be most suitable to cut short the attacks of such a neuralgia in its commencing stage. Salts of ammonia naturally suggest themselves, as highly *diffusible* stimulants, as likely to effect this purpose. After very numerous trials I have come to the conclusion, that though the preparations of ammonia, are generally available, the muriate in doses of ten to twenty grains, is very much the best; and in fact, if given early enough, seldom fails to cut short or greatly mitigate an attack. I need hardly say that among the out-patients of a hospital numerous hard-worked and delicate young women present themselves, who suffer from one or other of the forms of headache now referred to; and the efficacy of the muriate of ammonia treatment in my practice at Westminster Hospital has now become a fact of which the clinical clerks and students are well aware.

With less remarkable frequency, but still pretty often, I have observed the good effects of muriate of ammonia in *intercostal* neuralgia. I am not now speaking of the very severe and intractable form of that complaint which often attends, and in some cases continues long after, the eruption of herpes zoster; but of the much commoner form which is apt to occur in suckling women, and in some phthisical patients. In suckling women a very painful neuralgia often occurs, the principal site of which is a point or points in one or more of the intercostal spaces, an inch or two below the left nipple. In phthisical patients intercostal neuralgia is also rather common, but is not so limited as to the place of its maximum intensity; for it may occur on either side, and in any of the intercostal spaces. In both these varieties of intercostal neuralgia the use of muriate of ammonia is very frequently of striking benefit, pain being relieved in half an hour. It must be confessed, however, that the remedy is not successful in so large a proportion of the neuralgic, as of the myalgic affections of the chest-wall.

Neuralgias of the lumbo-abdominal nerves are occasionally benefited by the muriate, but only temporarily; in marked contrast with the prompt and permanent relief which this remedy so frequently affords to the myalgic affections of the lumbar and abdominal regions.

In sciatica there is a broad line to be drawn between the cases that may, and cases that may not, be benefited by muriate of ammonia. This medicine is generally applicable, as an anodyne stimulant, to those milder varieties of sciatica which occur in young persons whose health has not been profoundly shattered,

and especially in cases that are recent. In such affections the influence of the drug, though nothing like so important and essential a feature in the case as it is in that of myalgia and of many cases of migraine, is decidedly good. But in cases of long standing, and especially in those cruel and inveterate types of of the diseases which commence in the later periods of life, and are coincident with a progressive degeneration of the arteries and of the tissues generally, the muriate of ammonia is ineffective. Nor have I found it of any value in the truly *rheumatic* varieties of sciatica, although some authors have especially recommended it in these cases. I have elsewhere stated that in truly rheumatic cases I believe the mischief to be of an inflammatory character, and to have its origin and essential seat in the sheath and surroundings of the nerve, which becomes thickened, and, as it were, hypertrophied. Limiting the title 'rheumatic' strictly (and as I believe properly) to such cases, I do not find that the muriate of ammonia has any genuinely beneficial effect upon them; while, on the other hand, the iodide of potassium does appear to be singularly useful: and, indeed, I believe it is only in this kind of neuralgia that the latter remedy can be at all depended upon to produce good results.

Of the effects of muriate of ammonia in the deeper-seated neuralgias—those which attack internal viscera—I can only speak with cautious reserve, seeing that the diagnosis of neuralgia in these situations is always surrounded with difficulty. In neuralgias of the *heart*, the best-marked members of the group, I confess that I have never been inclined to rely upon them, and consequently have made no experiments which are worthy of being recorded; for the imminence of the danger connected with this kind of affection has always predisposed me to make us of remedies as to which there is strong evidence that they exert a powerful influence over the nervous apparatus of the heart. Sulphuric ether in the emergency of the actual paroxysms, and arsenic and strychnia as prophylactics, have appeared more worthy of persistent trial in these very serious diseases. Adding opium to the list, I am inclined to say much the same (although here the element of danger to life has not to be considered) in the case of *gastralgia*. In ovarian neuralgia, however, a sufficiently common and a very distressing malady, I have once or twice seen full scruple doses of the muriate produce remarkable relief; though here, again, the action of ether, and still better of morphia, or of atropine subcutaneously injected, is usually found to be a far more certain and direct means of quieting the pain. There is one variety of visceral neuralgia, however, which, though much less common than the kinds now mentioned, indisputably exists, and is, moreover, very troublesome and rebellious to ordinary anti-neuralgic treat-

ment—viz. *hepatic*. No doubt there has been a great deal of vague and incorrect writing about hepatic neuralgia, the result of inexact diagnosis; but there are perfectly typical cases of the disease. The patient, with or without any obvious bilious disturbance, suffers from severe pain of the true neuralgic type, deep in the region of the liver, with intermissions of perfect ease; there are no inflammatory symptoms, and on examination we discover no sign of organic alteration. Sometimes the pain is limited to the immediate region of the liver; in other cases it extends towards the shoulder, as in many other liver affections. According to my experience nothing is more obstinate than such a case as this. Quinine and arsenic are either ill borne by the stomach, or, if they create no disturbance, at least effect little or no relief. But here the muriate of ammonia, in ten or fifteen grain doses, really acts "like a charm," cutting short the attack promptly, and also seems to dissipate the tendency to neuralgia.

The mention of muriate of ammonia as a remedy for hepatic neuralgia conducts us very naturally to the consideration of another characteristic action of the drug, which is really of very great value. Although I cannot, from any experience of my own, confirm the statements of various continental authors as to the effects of the muriate upon secretion generally, with regard to the secretion of *bile*, when suppressed under certain circumstances, I am convinced that this medicine is the most powerful of all functional restoratives which I have met with. There is a very familiar class of cases of acute jaundice, the origin of which can be distinctly traced to strong *nervous perturbation*. There are certain persons, of markedly neurotic tendencies, who, throughout their lives, are liable to suffer from severe nervous disturbance of one kind or another, when they receive any considerable shock, either mental or bodily. Many of these subjects are liable to headache of a neuralgic type; a majority, perhaps, are women, with either hysterical or choreic tendencies. A severe nervous shock, such as that of fright, or more surely still the persistent influence of a deep and growing anxiety, such as that which preys on the mind of an unfortunate girl of respectable connexions, who has been seduced and deserted, and finds herself pregnant,—such powerful disturbing emotional influences as these have frequently been known to suppress the excretory function of the liver in a very complete and dangerous manner, dangerous not merely from the toxic effect upon the blood, but from the intensely depressed condition of the nervous energy generally. The whole class of so-called cholagogue aperients are much more than merely inert for good in such cases, they are most actively harmful; and, by consent of all good authorities, a reviving and stimulant treatment is allowed to offer the only chance of good from direct medication.

Any ammoniacal preparation will be useful, and I have seen good effects produced by the bicarbonate, by sal-volatile, and also by acetate of ammonia, in doses smaller than those required to produce diaphoresis. But the muriate is by far the most effective preparation; and, indeed, I have seen several instances in which two or three doses of twenty grains, given at intervals of four hours, have produced a decided change, and a marked recommencement of biliary excretion.

A much more doubtful matter, as to which, nevertheless, I am not prepared even to lean with any strength towards the negative, is the reputed *emmenagogue* influence of muriate of ammonia. There are probably very few physicians educated in the ideas of recent therapeutics, who believe in anything like *specific* emmenagogues—that is to say, in remedies which in all circumstances, exert a more or less powerful and direct influence in the direction of provoking the menstrual flow. And although there are probably as few practical physicians who do not believe that there are several medicines which, given under exactly the proper and favourable circumstances, do appreciably assist the function in question, yet it cannot be disputed that there is always immense difficulty in deciding the exact degree in which this action has been curbed in any particular instance. It is abundantly clear that such remedies as iron only act by improving the quality of the blood and the general tone of the nervous system, and it is extremely doubtful if such medicines as aloes, either alone or in combination with iron, have any more than this effect, with perhaps the added advantage, in particular cases, of keeping the intestines unloaded, and thus removing a source of frequent mechanical pressure. Of ergot of rye, and one or two remedies physiologically allied to it, it seems as if we were justified in speaking rather more strongly; and it remains doubtful, as far as my experience goes, whether muriate of ammonia may not ultimately prove also to possess a real influence upon the pelvic sympathetic nerves, which approximates its effects to those of the former drug in this particular direction. Given in ten-grain doses thrice daily, in cases of amenorrhœa marked rather by general feebleness than by anything like anæmia, it has occasionally seemed to me to conduce directly and considerably towards the cure. But of this, as of all other emmenagogues, it is pre-eminently true that they are worth absolutely nothing unless used precisely at the fit occasion.

In concluding this paper we may remark that there is not one fact mentioned in it that does not point to the nervous system as the *locus in quo* of the therapeutic action of the muriate of ammonia. The relief it affords in myalgia, or in suppressed secretion, is surely as directly nervous as its anodyne effect in pure nerve-pain. It appears, in fact, when given in therapeutic

doses, to be a pure tonic stimulant to sensitive nerves, raising them to a level of tense vitality *too high* for the explosive perturbations which, when carried to the brain, are translated as *pain*, and to the vaso-motor system, directly inciting to a superior tone of the systemic vessels, which puts an end to that exaggerated passive congestion of viscera which is known to be fatal to the healthy performance of the function of secretion.—*Practitioner, Dec.* 1868, *p.* 357.

16.—ON THE USE OF THE BROMIDE OF POTASSIUM IN THE TREATMENT OF SOME NERVOUS AFFECTIONS.

By Dr. James Turnbull, Physician to the Liverpool Royal Infirmary.

[A most singular and interesting discovery has been recently made with regard to the therapeutical action of some of the vegetable alkaloids. It is found that by altering their constitution, so that they are changed from nitrile to ammonium bases, their actions are so completely changed that we might say they are reversed.]

The experimental researches of Dr. A. Crum Brown and Dr. Thos. R. Fraser have now actually proved what was here anticipated in 1854, and have demonstrated that certain properties are common to members of a series; for, by converting strychnia, brucia, thebaia, codeia, morphia, and nicotia, which are nitrile bases, into ammonium bases, by the addition of iodide of methyl, they not only reduce the poisonous properties of these alkaloids, rendering them comparatively innocuous, but they entirely change their action on the nervous system; so that, whereas several of the nitrile bases, more particularly strychnia, cause violent spasmodic muscular contraction, the ammonium bases,—for example, the iodide of methyl strychnium,—paralyse the spinal motor nerves, and cause muscular relaxation. "We may conclude," they observe, "from these facts, that, when a nitrile base possesses a strychnia-like action, the salts of the corresponding ammonium bases have an action identical with that of curare."

This is not only a most important discovery, but it shows what great results in the elucidation of the *modus operandi* of medicinal agents may be expected from well directed enquiries, aided by the light which the present advanced state of organic chemistry can throw on the subject.

[Passing on to the therapeutical uses of bromide of potassium the writer observes:]

The therapeutical use of the bromide of potassium, which I

wish more particularly to notice, is the power which it has of producing sleep when administered in full doses. There is no medical man in extensive practice who has not in various cases experienced much difficulty in overcoming the troublesome symptom of sleeplessness, and felt the want of an efficient remedy in cases where opium could not be used. Though opium is one of the most valuable remedies in the Materia Medica, we all know from experience that it often causes increased restlessness instead of sleep, and produces various consequences, such as constipation, headache, &c., which render it altogether inadmissible with some patients. Though morphia is less liable to produce such unpleasant consequences, it is not free from these objections; and the various other derivatives from opium which have from time to time been brought into notice, such as the sedative solution of opium, chlorodyne, nepenthe, &c., are none of them entirely free from the objectionable effects of the parent drug.

When sleep is prevented by pain, arising from some abnormal physical condition of the body, opium in some of its various forms is the grand remedy; and, if we except chloroform, it has no rival as a sleep-inducing agent in this class of cases, but there are others where the want of sleep arises from mental rather than from physical pain, or from trifling causes exciting a morbidly sensitive nervous system. In the latter, opium often prevents, instead of inducing sleep, and causes its after effects in an aggravated degree. I have tested the bromide of potassium in some cases of the latter description and being convinced that it is a remedy of power, and one the value of which is scarcely yet generally known by medical men, I shall briefly give some details of a few cases of this description in which I have used it with advantage.

Brown-Sequard was, I believe, the first to point out the value of the bromide of potassium in inducing sleep, and to show the mode of giving it, and the kind of cases in which it is most likely to prove of service. In one of his lectures on the recent advances of our knowledge in the diagnosis and treatment of functional nervous affections, he says, "It is of the utmost importance to improve the sleep, which is generally bad in persons attacked with a morbid increase of the reflex excitability. For this purpose an invaluable remedy has recently been discovered; it is the bromide of potassium. Except when pain is one of the causes preventing sleep (in which case opium, aconite, and belladonna should be employed together), I have found that this remedy has a wonderful power to produce quiet and refreshing sleep, without any drawback that I am aware of. I usually give to adults a dose of thirty grains of that salt a quarter of an hour before the last meal, and a second dose of

from thirty to fifty at bedtime. In cases in which, without any nervous complaint, there is sleeplessness, owing to some cause of cerebral excitement, as well as in all neuroses, excepting hydrophobia, tetanus, very severe cases of delirium tremens, and some forms of insanity, sleep is almost always induced by that remedy."

Dr. Behrend has published in the Lancet some cases in which he gave the remedy with great advantage. It was, however, from reading Brown-Sequard's lecture that I was first induced to make trial of it, and I shall now refer to some of the cases in which I have given it.

Case 2.—I frequently attend a gentleman, about 68 years of age, of nervous temperament, who has for many years had slight facial paralysis, and who had about ten years ago, and subsequent to the facial attack, a very severe nervous attack, with some head symptoms. He suffers habitually from constipation, and at times from dyspepsia, with flatulent painful sensations at the stomach, which often deprive him of sleep for many successive nights. In this case I have found that nothing affords so much relief as the bromide of potassium, which he takes when troubled with these symptoms in half-drachm doses, one about seven o'clock in the evening, and again at bedtime, with the effect of inducing sleep without the least unpleasant consequence.

The three next are cases of delirium tremens, and in the first of them opium had been freely tried without success, but sleep was readily induced by the bromide, given in half-drachm doses every four hours until two drachms had been taken. The second was a very violent case, where the remedy was administered in the same way, until seven drachms had been taken, but, with each of the last half-drachm doses of the bromide, a pill with one grain of opium was likewise given. After that, sound sleep was induced; and the symptoms rapidly abated. The third was a milder incipient case, where the bromide alone in moderate quantity sufficed to calm the nervous excitement and induce sleep.

Case 3.—The patient was a gentleman about 34 years of age, of dissipated habits, who had several times suffered from delirium tremens. I saw him, in consultation with Mr. Byerley, who had given opium largely without effect. The symptoms were like those of typhoid delirium; there was profuse perspiration, and the pulse was very weak and rapid. He had picking of the bed-clothes, and was quite unable to understand or reply correctly to questions. We ordered half a drachm of the bromide of potassium to be taken every four hours till he slept. After the fourth dose, which was taken about two o'clock in the morning, he fell asleep, and slept for five hours. He awoke

quite conscious, and when I saw him about midday all the symptoms were better, and he soon got quite well.

Case 4.—I was summoned to see, in consultation, a gentleman about 38 years of age, who had on several occasions suffered from attacks of nervous excitement, his habits having been intemperate for several years. He had the usual symptoms—restlessness, tremor, profuse clammy perspirations, and no sleep for three nights. He was quite delirious, and saw imaginary objects, but talked rationally for a few seconds, and then wandered quite incoherently. The pulse was very weak (94), and the hands very unsteady. He had been freely purged, and I at once prescribed half-drachm doses of the bromide, with aromatic spirit of ammonia, every four hours, the alcoholic stimulant being limited to six glasses of sherry, which, however, he overstepped. The following day he was still incoherent, but less excited, and more manageable. As he had not slept, the bromide was continued, and he was ordered to have with each dose one grain of opium. The next morning he went to sleep at half-past six, and slept soundly for four hours. He awoke at intervals during the day to take food, but no further sedative was needed, as he became perfectly quiet and rational; and, having slept the third night, he was quite convalescent on the fourth day from my first visit.

Case 5.—A gentleman, 33 years of age, a wine and spirit merchant, of nervous temperament, and rather irritable digestive organs, came under my care, suffering from vomiting. He was tremulous, perspiring, and had the frightened look of one who was suffering from over stimulation, though from constant tasting, rather than habits of intemperance. He had no delirium, but had suffered from restless, sleepless nights, as well as the vomiting. Having purged him with podophillum and aloes, I gave him fifteen grains of bromide of potassium, with aromatic spirit of ammonia, three times a day, and half a drachm of the bromide at bedtime. This treatment soothed the nervous excitement, and produced sleep, and in a few days he got quite well.

Case 6.—In the first number of this journal, I published the case of a woman, 26 years of age, who had hemiplegia, preceded by convulsions, and where sleeplessness was a prominent symptom. She was most urgent in asking for something to make her sleep, not having slept at all for many nights, and being greatly exhausted by want of rest. Fifteen grains of the bromide were ordered to be taken at six in the evening, and again at nine o'clock. She slept the first night, and after taking it in this way for a few days, there was no further need of the remedy. She also recovered completely from the paralysis of the side.

These cases will suffice to show any one that may not have used the bromide in full doses to overcome sleeplessness, that it is a valuable remedy, which may be safely administered for this purpose in a variety of nervous affections.

The bromide has been used with more or less benefit in many other nervous disorders, such as mania, hypochondriasis, chorea, vertigo, head-ache, and local affections. I gave it lately with very good effect to a young lady who had long suffered from hysterical difficulty in swallowing. Dr. Begbie states that he has prescribed it successfully in some cases of diabetes; and Dr. J. Russell Reynolds has given it with great advantage in certain nervous affections characterised by sudden, distressing, but indefinable feelings in the epigastrium and abdomen, which he attributes to disturbances of the vaso motor system. A case, which might be embraced in this group of anomalous nervous affections, and where there was disturbance of the circulation in the head, with uneasy sensations in the abdomen, was quickly removed by bromide of potassium, after other means had been resorted to ineffectually.

Case 8.—A gentleman, about 45 years of age, came under my care, who had formerly been stout and plethoric, at which time he suffered much from bleeding piles, but had for some years become less stout and had almost ceased to be troubled by the piles. He had distressing sensations at the epigastrium, loss of appetite, and flatulence, but he was most alarmed by some head symptoms, pain, giddiness, and floating specks before his eyes. There was no heat, increased action of the vessels, or any sign of determination of blood to the head, but, on the contrary, the pulse was very weak, and the countenance paler than natural. He took steel with ammonia, but, still suffering from the same symptoms, he went to Harrogate for ten days, and took the saline sulphur aperient water, which improved the condition of the digestive organs, but did not remove the uneasy sensations at the epigastrium, or in any degree diminish the head symptoms. On his return I prescribed 12 grains of the bromide, to be taken three times a-day, in a tonic infusion, with some aromatic spirit of ammonia. This had an immediate effect, in relieving all his symptoms and improving his appetite also, and within four days he said that, whereas he had been quite unfit for any business, he felt fresh energy and was able to face anything.

I shall now advert to what has been called bromism, or the effects which may be produced by the excessive use of this salt when it is taken in full or considerable doses for long periods. The following case is a good illustration.

Case 9.—A lady, about 47 years of age, whom I had previously attended occasionally, came under my care in November,

1865, on account of pain at the stomach and vomiting. There was constipation and very dark coloured motions, which seemed to be coloured by blood, as they got blacker by purging. On examination of the epigastrium, a tumour, the size of a small egg, was found in the situation of the spleen. She was seen by Dr. Vose also, and we both thought it might prove of malignant nature. By blistering, however, attention to diet, and other means to relieve the dyspeptic symptoms, and finally by the use of cod liver oil, which improved the general health as it had often previously done, the tumour gradually decreased, so that towards the end of the year it could scarcely be discovered. In the spring she went to Edinburgh, and put herself under the care of one of the leading physicians there, who prescribed bromide of potassium, the dose of which was increased to about a scruple thrice a day. She was more or less under his care all the summer and autumn, and she was so strongly impressed with the belief of the necessity of its continuance for the removal of the tumour, or what remained of it, that she clung to it with great tenacity. She lost her father in the autumn, and at that time her health was so bad that it was thought she could not long survive. In November, 1866, she returned to Liverpool, but did not place herself under my care for a fortnight after, as she did not wish to have the treatment of her Edinburgh adviser interfered with. Her friends, however, found that she was getting extremely weak and ill, and I was therefore sent for. I found her very emaciated and weak, and of a peculiar pallid colour. She was also inclined to doze, so that she often dropped off to sleep. There was remarkable slowness of speech, and difficulty in collecting the ideas and expressing them. The extremities were cold, and the pulse slow and very weak. She was fearfully depressed, and frequently shed tears. There was no tumour whatever to be felt, and therefore no indication for continuing the bromide. The symptoms were such as might have been partly due to malignant disease, but I thought they were chiefly caused by the protracted use of the bromide, and I insisted on it being relinquished. I improved the diet and gave stimulants and tonics, with cod liver oil; in fact, returned to the original treatment she had left off on going from Liverpool. The rapidity with which she recovered, getting colour, strength, flesh, and spirits, was surprising, and showed me that her condition and symptoms were entirely due to the excessive and protracted use of the bromide. She has continued perfectly well.

I was not then aware that Dr. Bazire had described a condition precisely the same, which was induced by the protracted use of the bromide of potassium. "When given," he says, "in large doses, such as thirty or forty grains, two and three times a

day, it produces very striking symptoms in about ten or fifteen days. The patient at first complains of a dull headache, becomes listless and apathetic, with an expressionless face and lustreless eye. His intellect is clouded, his mind confused, and he is unable to concentrate his thoughts. There is slowness of perception, and questions have to be asked several times before their meaning is understood and an answer can be obtained. If, when these symptoms have begun to show themselves, the medicine be continued, hebetude follows, with inability to think, and a kind of stupor resembling that of the first stage of typhoid fever, together with drowsiness, somnolence, and constant dropping off to sleep. In no case have I seen delirium or hallucinations. The pupils are dilated, and contract very sluggishly under the influence of a strong light; the sensibility of the conjunctiva is so deadened that a finger may be passed with impunity over the surface of the eye-ball without producing winking. Hearing loses its usual acuteness, and it is only by speaking in a very loud voice that the patient can be roused from his stupor."

These symptoms are similar to what I witnessed in the preceding case; and Dr. Bazire has described effects of a less severe character, but with an eruption of boils, occurring when the bromide is taken for much longer periods, in ten to fifteen grain doses, twice or thrice daily.

The chief object of this paper having been to give practical illustrations of some of the uses of bromide of potassium, I shall not enlarge on its *modus operandi*. It would seem, however, that it produces a direct sedative effect on the whole nervous system, especially the sensory and motary nerves, and that it has a power of controlling irregular vascular action. According to MM. Damourette and Pelvet, it acts as an anæsthetic on the nervous centres and cord on the one hand, and on the mucous and tegumentary surfaces on the other. It diminishes muscular irritability, and thus has an extensive effect on the muscular organs of digestion, respiration, and urinary secretion, as well as the striated muscles.—*Liverpool Medical and Surgical Reports, Oct.* 1868, *p.* 9.

17.—AMERICAN CONTRIBUTIONS TO THE STUDY OF CUTANEOUS NEUROSES.

By Dr. H. S. Purdon, Physician Belfast Dispensary for Diseases of the Skin; Assistant Physician Belfast Charitable Infirmary, &c.

Neuroses of the Skin.—In the early part of last year a distinguished American dermatologist, Dr. Howard F. Damon,

published a monograph on "Neuroses of the Skin," which work has been favourably mentioned by Dr. Brown-Séquard.

In the introductory chapter our author informs us that neuroses of the skin are caused by peculiar conditions, either of the sensitive or of the vaso-motor nerves. The sensibility of the former may be exalted or diminished to a variable extent. Spasm and paralysis are the peculiar forms of derangement of the vaso-motor nerves.

The first disease treated of is "Dermalgia," manifested in the form of tenderness, or increased sensibility to touch, and is generally confined to a limited portion of the skin. Sometimes, however, it involves the integument of one side of the body—usually the left—or even the whole skin. "The skin is either painful to the touch only, or the pain may be spontaneous and independent of contact with any sensaible object. In other instances a draught of air may be sufficient to excite this pain, or the threatened contact with any material substance. Dermalgia appears to be of two kinds as regards cause—the hysteric and rheumatic. That form which is associated with hysteria is usually confined to the left side, and is often extensive; sometimes, however, only small areas of the skin are endowed with this exquisite sensibility to external impressions. These are veritable neuralgic spots . . . This irritation may have its origin in unhealthy conditions of the uterine organs and the sympathetic troubles to which they give rise. When this hyperesthesia to touch is more general and of a severe character, it has been regarded as one of the indications of commencing myelitis, or of inflammation of the membranes of the spinal cord. There is a rheumatic form of dermalgia which is confined to a limited portion of the skin, and which is encountered frequently in practice. It consists in an excessive tenderness to the touch, and sometimes pain. When the latter symptom is present, alteration in the nutrition of the part speedily takes place. The skin often becomes red, and there is slight engorgement of its tissues. The tender spot occasionally occupies a portion of the integument supplied by filaments of some large cutaneous nerve. The disease appears to be due—for the most part, however—to a morbid condition of the sensory apparatus of the skin. . . Dermalgia has been observed to be more frequent in those regions which are occupied by hairs or lanugo than elsewhere. The arrangement of the hairs upon the surface of the body corresponds somewhat with the general distribution of the cutaneous nerves."

The rheumatic variety of this painful affection is usually of an intermittent character—worse at night; and in course of time the nerves themselves appear to become implicated. It is often complicated with muscular pains.

In the treatment of dermalgia our author recommends the application of blisters, the linimentum ammoniæ and belladonna. Internally hyoscyamus, combined with valerianate of zinc, and states that the efficacy of the valerianates has been confirmed by many practitioners, amongst whom Dr. Silas Durkee, of Boston, is specially mentioned. If the patient is sleepless he administers the bromide of potassium in very large doses, such as from thirty to sixty grains, at bed-time, and which, we are informed, quiets the nervous excitement of the patient, thereby insuring sleep. If the insomnia persists the hypodermic injection of morphia is recommended. Where there is much debility present the bromide of ammonium is to be preferred to the similar preparation of potassium.—*Dublin Quarterly Journal, Feb.*, 1869, *p.* 98.

18.—SULPHATE OF NICKEL IN NEURALGIA.

The interest of the following remarks does not lie in the employment of the sulphate of nickel in neuralgia, but in its therapeutic effects. We are told that it is a gentle tonic, acting like the preparations of iron and quinia. In this case, however, it seemed to exercise a sedative influence, more closely resembling that of the bromide of potassium.

Mrs. B. has suffered with neuralgia more than three years. During the last two months the paroxysms have been very violent and frequent—occurring every few minutes. She has taken iron, quinine, arsenic, strychnine, colchicum, aconite, morphine, chloroform, valerian, zinc, mercury, electricity, and many other remedial agents, with only temporary relief. As Prof. Simpson had used the sulphate of nickel successfully in a case of severe and obstinate periodic headache, I concluded to try it, and began February 19th by giving her half-grain doses three times a day. In less than a week the paroxysms were reduced to only one within twenty-four hours; this came on at noon. On last Sunday (March 1st) it did not commence until about 3 p.m. I was present and gave one grain of the sulphate, notwithstanding she had taken her regular doses that day. Its sedative action was speedily manifested in reducing the pulse and producing sleep. All symptoms of the paroxysm disappeared, and Mrs. B. states that they did not return until 7 o'clock. In this case the sulphate of nickel has given more permanent relief than anything else; Mrs. B. tells me that it soothes her quicker than morphine, and is not followed by any unpleasant effects.—*Medical Press and Circular, Dec.* 30, 1868, *p.* 562.

19.—ON HEMICRANIA, OR SICK HEADACHE.

By Dr. Samuel Wilks, Physician to, and Lecturer on the Practice of Medicine, at Guy's Hospital.

[Hemicrania, or sick-headache as it is generally called, is of a dull and sickening character. Its great peculiarity is the throbbing which occurs with each beat of the heart, aggravated by every movement of the body, and more especially of the head itself.]

Now, as to the cause of this misery, I have already said that whilst the body is cold the head is hot, and that whilst the radial artery is small the carotid is full; in fact, if the term determination of blood to the head is applicable to any malady it is assuredly to this. This irregularity in the circulation due to nervous influence has created much interest of late years, as I have already told you in describing various diseases. It has been clearly shown that the blood-vessels are regulated in calibre by the sympathetic nerves, and that the supply of blood is immediately under nervous control. Now in this complaint of which I am speaking, the carotid on one side with its branches is dilated, throbs inordinately, and sends too much blood to the brain and its coverings. The fact I knew when quite a boy, for when leaning my head on my hand I distinctly felt the increased size of the throbbing temporal artery on the side of the pain, which would be sometimes on the right and sometimes on left side. I remember mentioning the circumstance to more than one medical man, and they received the statement with incredulity. I knew it, however, to be a fact, nevertheless, and am sorry to say I have been too fully aware of it up to the present day. The fact is, that in this dilated throbbing carotid and its branches lies the source of the trouble. The vaso-motor nerve on one side is for the time paralysed, the vessels of the head dilate, more blood is sent to it; and thus the increased heat, throbbing, and pain which the patient has to suffer until the tone of the nerve is restored. The most important question to solve is the immediate cause of the function of the nerve being thus temporarily in abeyance. Since a stomach derangement usually accompanies the hemicrania, it is very frequently thought that the source of the trouble is always gastric, and that medicine of a particular kind will relieve. That this is partially true is no doubt correct, but just as frequently the complaint arises from a direct influence on the nervous system. Besides, if arising from the stomach, the cause is not the same as that which operates injuriously in the mass of people from over-indulgence in eating and drinking, and which produces a more general headache in consequence, but the cause is a slighter one, and dependent upon a number of trivial circumstances

which the sufferer himself could alone detail. It may be said no doubt with truth, that gastric derangement is a very common exciting cause in those who are subject to the complaint, but very frequently no cause for the attack is apparent, and certainly none attributable to the stomach. When the cause is evident, it is very often one which has acted directly on some portion of the nervous system, and to the non-susceptible would scarcely be credited with so powerful an operation. Thus all worry, excitement, or overwork will readily produce a headache ; walking in the sun is a very sure method of inducing an attack ; strong impressions on the olfactory nerve, as the smell of paint, and in some persons the odour of spring flowers ; also impressions on the retina, as long use of the microscope, or a protracted visit to a picture gallery. An atmosphere overcharged with carbonic acid is one of the most fruitful sources of headache, as that of a crowded assembly-room, and what would affect myself at once and in the most intense degree would be the presence of unconsumed carbon from candles or lamps. Loud noises in the ear will also cause a headache ; and, in fact, it would seem that a strong impression made upon any part of the nervous system is sufficient to induce an attack. Probably derangements of any organ might also bring it on, as of the stomach, which we constantly see, and in women the uterus, more especially at the catamenial periods. Some of the most violent attacks which we witness are in women at these periods. There are those who are doomed every month to an illness of a few days, with intense headache, prostration, and sickness ; if there be much uterine pain, the case is styled one of dysmenorrhœa, and the cause attributed to the uterus, which may or may not be true. Those, both men and women, who are thus liable to these violent headaches are proscribed many of the pleasures of life, since irregularities of any kind are so apt to lead to their wonted complaint. Under the most favouring circumstances, however, it is my experience that they can never escape an occasional attack.

As such trivial causes are sufficient to induce an attack of this hemicrania or migraine, it might be supposed that some equally slight circumstance might be sufficient to counteract or cure it. I should think it probable that such is the case, although, after long searching for the remedy, I have not yet discovered it. Certainly the ordinary aperient doses which the medical man so commonly prescribes for a headache are useless ; besides, the attack may have spontaneously subsided before there could be any expectation of a result from the medicine. The act of vomiting, however, does in some cases afford very speedy relief. This is not by getting rid of any crudities, for the stomach may be empty, and therefore the effect must have been through the nervous system. As regards stimulants, as a rule they cannot

be prescribed ; they often aggravate the complaint to an intense degree, although I have found that in some milder cases a little brandy-and-water or a glass of champagne has, after a short period, been apparently beneficial ; sometimes a cigar. Of all remedies perhaps tea is the best, but I am not quite certain what amount of benefit is to be ascribed to the tea and what amount to the hot water. Tea, of course, is well known to have a direct and marked action on the nervous system, and thus it might appear absurd to raise a doubt as to its efficacy did I not know more than one person who obtains more relief for a headache by sipping very hot water than by any medicine which has ever been prescribed.

Those who have any knowledge of the perpetual and horrible throbbing in the brow or temple, also know that nature prompts relief by pressure on the aching part. The leaning the head against the hand or other object is in obedience to what instinct dictates. On lying down, the aching brow is always pressed against the pillow. By more direct and intentional pressure a more marked relief is obtained. Thus, a pressure on the carotid in the neck will produce a suspension of the throbbing and the pain, but the effect is only for a time, as the blood apparently soon finds its way to the head by other channels. Although the use of pressure may at the present time have a show of reason, it has no doubt always been adopted at the dictate of nature.—*Medical Times and Gazette, Jan.* 2, 1869, p. 1.

20.—ON THE TREATMENT OF EPILEPSY.

By Dr. Samuel Wilks, Physician to Guy's Horpital.

As regards the treatment of epilepsy, it must be considered entirely empirical. The term rational can scarcely be introduced even in the minor questions of diet, air, &c. I have certainly known patients reduce their amount of food and drink, especially in the article of meat, and with a corresponding diminution in the number and severity of fits ; but on the other hand, I know other cases where a generous diet has been equally necessitated. It is just one of those cases where particular drugs may be of service, and beyond their administration we can do little. If any old woman had the possession of a herb or a salt which could antagonise the disease, her knowledge would be worth more than that of the whole College of Physicians. I am happy to say that this does not apply to many other diseases where the knowledge you have acquired of their nature will serve you far more than all the medicines in the Pharmacopœia. The remedies, then, are empirical ; those that have hitherto been most in vogue have been the metallic tonics.

It is remarkable that such class of drugs seem to have more efficiency in morbid states of the nervous system than those which have a more direct physiological effect. In the whole range of nervous affections you will find this to be the case. In my own experience the only remedies of this kind which I have seen useful have been belladonna and nux vomica—drugs having different physiological actions. I have had cases where both remedies have been apparently beneficial. The metals have been used with a certain amount of success from time immemorial, such as arsenic, silver, iron, and zinc. Some years ago I used all these remedies largely amongst the out-patients, and should certainly give the preference to zinc; I know now more than one case of epilepsy where the patient is always better on the resumption of this remedy. If you suspect any local cause in the brain, you may adopt other measures; thus I have seen a case apparently cured by mercury. Those which were benefited by iodide of potassium had no doubt a syphilitic origin.

It was whilst I was examining the effects of the various remedies that I discovered the very superior value of the bromide of potassium. I was at that time trying this remedy against the iodide in bronchocele and some other disorders, and being in the habit of often using the iodide in epilepsy, I substituted the bromide for it. I was at first under the impression that it was acting as an absorbent, and was picking out for its operations those cases where the disease had a syphilitic or local origin; but when the cures came to be numerous, the explanation would not apply, and it was evident that a very valuable specific remedy had been obtained. Various writers had certainly mentioned the drug with a host of others, but only to again lay it on the shelf with them. I was not aware at that time that Sir C. Locock had recommended its use, for it does not appear that his observations had been specially brought before the profession, much less been confirmed by others. As far as I know it was when Sir C. Locock was President of the Royal Medical and Chirurgical Society, on the occasion of Dr. Sieveking reading a paper on epilepsy, that he made the following remarks, and which I quote from the Lancet of May, 1857:—"Some years since he had read in the British and Foreign Medical Review an account of some experiments performed by a German on himself with bromide of potassium. The experimenter had found that when he took ten grains of the preparation three times a day for fourteen days it produced temporary impotency, the virile powers returning after leaving off the medicine. He (Dr. Locock) determined to try this remedy in cases of hysteria in young women unaccompanied by epilepsy. He had found it, in doses of from five to ten grains three times

a day, of the greatest service. In a case of hysterical epilepsy which had occurred every month for nine years, and had resisted every kind of treatment, he had administered the bromide of potassium. He commenced this treatment about fourteen months since. For three months he gave ten grains of the potassium three times a day. He then reduced the amount, and the patient had no epilepsy since the commencement of the potassium. Out of fourteen or fifteen cases treated by this medicine only one had failed." It was in the early part of 1860 that I commenced to use it; in the following year about a dozen cases were published in the Medical Times and Gazette, being the first series of cases systematically described (that I can find) in which the remedy had been found eminently successful. It was thus evident that the bromide was not simply supplanting the iodide in the cure of some special form of the complaint, but that the drug had some remarkable influence over the pure and simple form of epilepsy. This has now been confirmed by others, and even by those who had previously merely administered the bromide, as they had done many other remedies, without sufficient trial, and had discarded it. Of course, like every other remedy, its success has been overrated, and thus the disappointment which naturally accompanied the reaction of opinion, more especially when it was employed for almost every disease in the nosology. As regards drugs, then, I should say that zinc and the bromide are the most important; but you will have no lack of opportunity of trying the effects of remedies, for epileptics often insist on being physicked year after year when absolutely nothing is being done for them.

I ought to mention the occasional value of counter-irritants to the back of the neck, and of setons. I well remember two men who some years ago attended at the Hospital, and whilst the seton was open the fits were absent; when this dried up they returned. I have seen other cases of the kind since this time. I have already mentioned the case of a man whose life we saved by bleeding. I do not know that it is a remedy against the disease, but that it acts in the most beneficial manner if the paroxysm is long-continued I have no doubt. In the case I referred to the man had had a succession of fits for some hours, had swallowed nothing, and must shortly have died from congestion of the lungs, had not the lancet relieved his circulation and almost immediately restored him to consciousness. I think it very probable that in those cases in former times which were considered apoplectic, and in which recovery rapidly took place after bleeding, epilepsy was the real disease. I am convinced that I have seen several such, and therefore think they cannot be uncommon. A man, for example, is seized with a fit; you are called to him, and find him comatose, with stertor and

apparent paralysis of one side; you consider it to be a case of apoplexy, and recommend bleeding; he soon afterwards recovers his consciousness, and after a few hours the weakness of the limb has passed, and the patient is comparatively well. Whatever the diagnosis, the remedy has succeeded, and thus, in a severe fit of epilepsy which becomes protracted, I have no hesitation at all in recommending you to open a vein. It might appear strange, after declaring that an epileptiform fit may be induced by loss of blood, immediately to recommend venesection as a remedy, but it does not follow that the theory and the treatment are antagonistic, for whatever may be the immediate cause of the seizure the result is a spasm of the chest, which, ending in congestion of the lungs, is best relieved by liberating the blood from the overcharged venous system.

I ought not to forget to mention the remarkable circumstance of our capability of arresting the attack by acting on the spot whence the aura proceeds. If the attacks were due directly to an irritation reflected from one spot, then the removal of this cause would stop the fit, as in the case of the child I mentioned, whose father assured me that the application of laudanum to a sore spot on the face would arrest or mitigate the paroxysm. But when the sensation on the surface is altogether subjective, a great difficulty in the explanation arises; unless we are content with supposing that as one portion of the brain must be more especially involved in order for the sensation to be felt in one part of the body rather than another, so some external application to that part may cause a corresponding reflection backwards, and arrest the process that had already commenced.—*Med. Times and Gazette, Jan.* 23, 1869, *p.* 84.

21.—THE TREATMENT OF "EPILEPTIFORM" NEURALGIA IN ITS EARLIER STAGES.

By Dr. Francis E. Anstie, Senior Assistant-Physician to the Westminster Hospital.

["Epileptiform" neuralgia is that terrible form of facial neuralgia characterised less by the spasmodic onset of the pains than by the remarkable constitutional and family history which distinguishes the victims of the disease. Trousseau considered that nothing but a temporary alleviation of suffering could be expected.]

There is no doubt that Trousseau's description of spasmodic facial neuralgia, as a disease hopeless of cure, was, at the moment, nearly correct. He is evidently speaking of a malady quite different from the milder neuralgiæ which may occur at any time of life—a neuralgia which is rare, is confined to cer-

tain highly neurotic families, and which, among those families, only attacks a limited number of individuals who have passed the prime of life and entered upon the period of organic degeneration. The pain is of frightful severity, and is all the more difficult to bear because of the agonising suddenness with which it darts through the affected nerve, perhaps aroused by some trifling and necessary muscular movement, such as mastication. That very large doses of opium are required to produce any great impression on the disease, if the medicine be given by the stomach, is also perfectly true. These doses must be continued, and rapidly increased, with the unfailing effect of seriously disordering the functions of digestion and assimilation. And, after all, the best result attainable is, that for a few weeks or months there may be a notable diminution of the severity of the pain; but with the certainity that, sooner or later, it will revive in all its intensity, and that then neither opium nor anything else will produce any perceptible impression upon it. The remainder of such a patient's life is rendered additionally miserable, in most cases, by a total derangement of digestion and consequent failure of nutrition.

Now I believe that a very much better result than this may be obtained if the malady be treated, from an early stage, according to the following plan:—1. Counter-irritation of a peculiar kind. 2. Nutritive tonics. 3. Subcutaneous injection of morphia, or of atropia, according to circumstances.

1. Counter-irritation, to be useful in epileptiform facial tic, should not be applied to the branches of the fifth, but to those of the occipital nerve, at the nape of the neck. A blister in the former situation is as often hurtful as useful: in the latter, it is sometimes strikingly effective in gaining a short respite. And this is of very great consequence in this awful disease; for the mere fact of such pain being allowed to continue is itself of the worst possible omen. 2. The assiduous use of cod-liver oil, or of some fatty substitute for it, should be insisted on from the first, and is of the highest consequence. 3. Subcutaneous injection places us in a totally different position towards the use of opium in spasmodic tic. There is no longer any excuse for the use of enormous doses of opium from the first. It will be sufficient to commence with the use of one-sixth of a grain of morphia twice daily, increasing this, if necessary, to one-fourth and one-half a grain; and, in rare cases, to one grain. If this produces, along with the other measures, a notable remission of the pain, it should be cautiously and steadily decreased, as circumstances may admit. In cases where morphia fails, atropia may be tried, in doses com-

mencing at one-sixtieth of a grain. The injection of a less quantity than this would probably be useless in severe tic.

Hopeless as was the cure of the form of neuralgia which I have now described, under Trousseau's plan, or any other which might be directed to the object of deeply narcotising the patient, the prospect is by no means so cheerless when the subcutaneous injection is employed, with the precautions above mentioned. Although I cannot say that I have ever seen a positive and complete cure of a facial neuralgia setting in under the conditions which have been described as peculiar to this disease, it is certain that the experience of those who have used the subcutaneous method extensively has proved that the attacks may be kept at bay, and their severity greatly mitigated when they occur; with this general result—that the setting in of a facial tic in the latter period of life, even in a patient whose family and constitutional history is of the worst augury, is no longer a fatal warning of life-long and scarce endurable misery. The economy in the necessary use of opium effected by the use of hypodermic rather than gastric administration is enormous; and this not merely for the purpose of producing a given effect by a single dose, but also (which is most important in regard to the preservation of digestion and nutrition) with regard to the rate of increase in the doses.

In the above remarks I have only referred to methods of treatment which are within the reach of every practitioner. It is necessary to state, however, that for those who are so circumstanced as to be able to provide themselves with proper apparatus for the generation of a constant galvanic current, the prospects of effecting good in even the most seemingly hopeless cases of spasmodic facial tic are very greatly increased. Not to dwell, now, on my own more limited experience, I maintain that it is impossible for any candid person to study carefully the treatise of Benedikt without coming the conclusion that we have in the constant current a remedy capable of effecting much more, in these severe cases, than any treatment by drugs, or any other means. A low-tension current from a Daniell's battery (using from five to fifteen cells, according to circumstances) applied daily in *séances* of a few minutes, appears sometimes to entirely arrest facial neuralgia of the worst type, and commencing under the most unfavourable omens. Especially may we indulge hope, as it seems to me, in regard to the results which may be obtained from the galvanisation of the sympathetic, in cases which would otherwise afford no rational hopes of more than the most trifling amendment. But on this point I have not space to dwell at length, and any very condensed account of this mode of treatment would be likely to mislead. To those who possess the requisite preliminary

knowledge of electricity and electro-physiology, and also the opportunities of providing themselves with the somewhat expensive and troublesome luxury of a really effective constant battery, I would urge the necessity of a careful study of the English treatise of Althaus, and the German treatises of Remak, Benedikt, and Meyer, upon the medical uses of electricity. They will find facts therein which will at once arrest their attention, and engage them seriously in a most important branch of the therapeutics of nerve-pain.—*Lancet, Jan.* 9, 1869, *p.* 42.

22.—ON THE USE OF BRUCINE IN STOMACHAL EPILEPSY.

By Dr. J. Spence Ramskill, Physician to the Hospital for Paralysis and Epilepsy; Physician to, and Lecturer on Medicine at, the London Hospital.

[Many cases of epilepsy have, as a warning of the coming fit, some disturbance referred to the stomach, such as nausea and flatulence. There may be no proper symptoms of dyspepsia in the intervals between the fits.]

Suspension of epileptic attacks is, for many reasons, always desirable. Yet suspension is not cure; and, for the most part, when you cease to give bromide of potassium, the attacks return. Can we prevent these? I think we can often do so by building up the patient, by using means to improve the nutrition of the tissues, of the nervous masses, and of the ganglionic nerves especially; for I hold that a convulsion is an impossibility in a perfectly healthy brain and nervous system; and I think these views should form the basis of all treatment. Is there any tonic remedy of value for this purpose? I think so; and I have found the best in brucine,—beyond many of recognised value. Mr. Tyrrell (of Malvern) has published some cases treated successfully by strychnine. I have used this drug extensively, and when the patient can remain under close observation, or if he be attended by intelligent friends, I should not hesitate in proper cases to recommend its use. But there are cases of idiosyncrasy, and small doses will sometimes evoke disagreeable toxic symptoms. I have not been annoyed in this respect with brucine, perhaps because it is a weaker alkaloid, and the patient gets more easily accustomed to its use. Its physiological effects, however, so closely resemble those of strychnia, that it may be taken for granted their therapeutical virtues are the same. I usually order it in a solution made of the same strength as the liquor strychniæ of the Pharmacopœia, and commence with a dose of ten minims, to be taken twice daily; every third day an addition should be made of five

minims to the dose, until from a third to half a grain is reached. If any stiffness of the jaws or other toxic symptom appear, the dose is to be diminished by five minims, and contined until any new objectionable symptom is manifest; then it is again lessened. You will not find any benefit from either brucine or strychnine, till a full dose is reached; often the reverse effect. As a rule, patients will take twice as much brucine as strychnine, without any necessity for diminishing the dose. After the continuous administration of brucine for a month, I think it well to suspend its use for some days, and then again resume it. I may remind you that Dr. Marshall Hall used strychnine in epilepsy, but he gave it in very small doses, and without success. Given in large doses, and with the precautions already mentioned, I have not met with any case suggesting cumulative action, or suddenly poisonous effect, from the administration of either alkaloid. You will find great satisfaction in giving bromide in large doses at bed-time, at the same time ordering brucine twice daily; thereby you ensure the sedative action of the bromide, and the tonic effect of brucine on the whole nervous system.—*Lancet, Jan.* 16, 1869, *p.* 76.

23.—ON THE TREATMENT OF CHOREA.

By Dr. Samuel Wilks, Physician to Guy's Hospital.

It might be thought by the inexperienced that those drugs which exert a physiological action over the nervous system would be those which would arrest the complaint known as chorea. but, as a matter of fact, this is not the case, so that I have almost given up looking for a remedy in the direction of this class of medicines. I do not despair, however, of finding some drug which might counteract that morbid condition of nervous system which is present in very bad cases, but in the absence of such remedy our ordinary curative means are of little avail, seeing that they can act only slowly and tend to produce a change long after the time at which the acute form of the disease would prove fatal. In these very severe and bad cases we can only hope to preserve the life of the patient sufficiently long for the most approved tonic remedies to act. For example, in such cases as I mentioned just now of children suffering from acute chorea induced by fright, a fatal termination may occur in a few days, and in these the direct sedatives are suggested. Morphia, as far as I have seen, is useless. I can call to mind two cases where large doses were given, but the effect was only transitory. The same with chloroform; the vapour produces but a temporary tranquillising effect, and our experience of it is not encouraging either in chorea or in

the allied disorders, tetanus and hydrophobia. I have never seen strychnia of any use in the acute affection; and the same of belladonna and conia. In the less severe cases it is possible that one or two of these medicines may be useful, but I feel convinced that the class of medicines of which I speak—those which have a physiological action on the nervous system—are far less efficacious than the metallic tonics. It would seem that in order to produce a cure a bracing up or restoration of the original nerve-power is necessary, and that the mere subdual of symptoms in no way tends to cure the complaint. When I say this I speak with some little hesitation of the effects of belladonna and conium, both of which remedies I have seen apparently useful. I remember when at Paris some years ago hearing Trousseau give a lecture on this disease and warmly recommend belladonna. On another occasion he was declaring that there was no drug in the Pharmacopœia equal to strong coffee, and on a third occasion he was vaunting the new gymnasium at the Hospital for Sick Children as the best therapeutic agent he knew. I mention this to show you that there really is no specific treatment for the disease. I might say that we thought we saw some benefit in one case after the use of cannabis indica, but none whatever in four cases in which we tried the physostigma.

I believe I can tell you something very positive about the treatment of chorea, and I only wish I was enabled to make the same boast in reference to some other diseases. Many years ago, seeing that every medicine in the Pharmacopœia as well as several others out of it, were said to be equal to the cure of chorea, I determined to watch the disease untrammelled by medicine, and I found that in many cases a speedy recovery took place without the administration of any medicine whatever. The cases which did best were the severe ones, excepting always those which were of the most violent and acute description. The first case which I watched was a little girl who had severe chorea; she was too bad to be able to stand, and was obliged to have sideboards to her bed to prevent her wriggling out of it. This child began to improve in a day or two, and went out well in a month. This is only one example of several of the same kind. I take it that the patient, being subject to constant excitement or improper treatment at her own home, has her disease there perpetuated, whereas when brought to the hospital, being under the influence of strangers who endeavour to make her suppress the movements, and by the additional advantage of good living, she begins to recover. I should say that a weakened condition of the nervous centres being at the root of the malady, good nourishment and the tonic plan are necessary. After having learned the fact that

the tendency of the disease is towards recovery as soon as all the circumstances which formerly surrounded the patient were removed, I soon afterwards learned that the cure is expedited by tonic medicines of the mineral kind, and this is the experience of the majority of the profession. I have put the treatment before you in this way to prevent you supposing that such remedies as iron or zinc act in any specific manner; they are useful, but operate as nervine tonics. I believe Dr. Elliotson many years ago acquired great fame by his success in the treatment of chorea, his remedy, as you know, being the red oxide of iron. We still give it, and it is one of the best of remedies; our children very willingly take half-drachm doses in treacle. Probably an equally favourite remedy here is the zinc—in fact, it is the medicine most commonly given, beginning with grain doses, and increasing to any amount, as a scruple three times daily. A favourite remedy of my late colleague Dr. Hughes was rhubarb steeped in port wine; the children were thus well kept up at the same time that the stomach and bowels were improved in condition.

In very chronic cases, and those where a part of the body only is affected, medicines are of little use. In some of these electricity has sometimes been curative; in some cases shower-baths have acted with the best success. One writer has advocated the use of liniments, as of chloroform, to the spine. Often nothing less than a thorough change of scene will suffice to break the habit. If this opportunity do not occur, gymnastic exercises are of use. They not only strengthen the muscles and nerves, but they break the bad habit; they convert in fact, an irregular movement into a regular one. If the arms are constantly moving, and are then employed in grasping a beam for swinging, a new and altered condition of the whole machinery accrues, and in time the habitual irregular actions are worn out. I am sorry that we have not a gymnasium here, and therefore all I am able to do is to order my patients a skipping rope. I believe the only method by which the chorea, which at one time prevailed in religious houses, was sometimes able to be cured was by making the ladies dance to the notes of music.—*Medical Times and Gazette, Feb.* 6, 1869, *p.* 136.

24.—ON THE USE OF INDIAN HEMP IN CHOREA.

By Dr. Douglas, Vice-President of the Medico-Chirurgical Society of Edinburgh.

Dr. Russell Reynolds, who writes one of the most recent, and one of the best expositions of the value of this remedy, tell us, as the result of a manifestly practical and thoughtful experience,

that "it is a soporific, anodyne, and antispasmodic; and that it relieves pain and spasm; that it does not leave behind it headache nor vertigo; nor does it impair the appetite, nor confine the bowels."

[The patient, a girl 13 years of age, was admitted into the Chalmers Hospital on the 15th of October last. A month previous to admission she had been taken with an attack of rheumatic fever. No symptoms of cardiac inflammation occurred. The choreal action had existed about a fortnight.]

During the day immediately succeeding her admission, a rapid change occurred in the degree of the choreal movements, and in the state of the heart's action. The latter became so disturbed, feeble, and excited, with feeble arterial pulse, as to cause serious anxiety for the safety of the patient, and at the same time the choreic agitation increased with such violent restlessness and rolling in bed that excoriation occurred over the sacrum and both nates, while contortion of the features and tossing of the extremities, especially when their movement was attempted, continued excessive. The articular effects of rheumatism decreased, temperature became more natural, the urine healthy, but the bowels became torpid. The arsenic was persevered with, and a few 30-grain doses of bromide of potassium were given. Each dose was followed by a short period of quiescence, but, on the 20th, the excitement of the heart's action became so alarming that 25-minim doses of tincture of Indian hemp were administered, followed by apparently marked, but only transient abatement of the spasmodic movement, which, as Dr. Hogg, the resident physician, reported, seemed to recur subsequently with increasing and distressing severity.

On the following day—that is, the sixth of her residence in the hospital—her condition seemed desperate, chiefly on account of the protracted and uncontrollable hurry of the heart's action. She was ordered to have *six minims* of the tinct. cannabis every hour, the arsenic and other remedies being intermitted. The bowels were now well regulated, the excoriations of the back and nates had increased so as to form superficial sloughs of considerable extent, the pulse was small and so rapid as not to be counted, and the heart's action was still feeble, rapid, and disturbed. She had four ounces of brandy per day. On the following day, having had twenty doses of the tincture, there was marked and increasing improvement. The violence of the tossing and rolling had diminished materially, though still it was necessary to have her secured in bed to prevent her falling or rolling over. From this time till the 15th day of her residence in the hospital, the tincture was administered from hour to hour, and she continued to make daily and progressive

improvement. At that date (the 28th) she had been free of all the more violent spasmodic movements for two days; the heart's action was quiet, pulse about 80, appetite good, bowels regular. She still presented a degree of the peculiar grimace, with awkwardness in protruding the tongue, and in movement of the arms and hands. There was great mental lethargy, with languor and exhaustion, which made it impossible for her to be out of bed.

The tincture of hemp was now discontinued, and arsenical solution in four-minim doses resumed.

The subsequent progress of the case, though tedious, and so far disappointing, may be told in a few sentences. On the 1st of November, and on several occasions during the rest of that month, there occurred a renewal of the choreal state, which had not indeed absolutely disappeared, though it was often so trivial and even absent as to encourage the hope of an early recovery. Arsenic was perseveringly employed, with a carefully-regulated diet and general management, but on each occasion, of which three were noted, when an exacerbation of the choreic condition arose, a marked abatement of the muscular action resulted from the administration of small and hourly-repeated doses of tincture of hemp, relief sometimes arising so speedily as within six or eight hours. On one occasion the improvement was not decided for three or four days.

In the beginning of December, rheumatic symptoms recurred with slight febrile action and articular pains and renewal of choreic agitation. At the same time, marked excitement of the heart's action was renewed, and now, for the first time, a faint soft diastolic murmur, indicative of aortic regurgitation, was with difficulty perceived. A weak solution of acetate and nitrate of potash was administered, and grain doses of opium four or five times in twenty-four hours. Pain and fever abated, but not the spasmodic movement, and on the third day afterwards six-minim doses of tincture of hemp were given every two hours, followed by an immediate decrease of the chorea, which at once declined to its slightest degree in two or three days.

The patient now presented more marked indications of returning health. The state of mental lethargy into which she had early lapsed was now passing off; her appetite was revived, and on the 20th December she was able to be out of bed and to walk with assistance. Small doses of the iodide of potassium with the infusion of quassia were given, and improvement went on uninterruptedly; she did not, however, cast off the choreic jerk and awkwardness till the second week of January, 1869. She has since had a very comfortable convalescence, but the diastolic murmur noted above continues strongly developed.

The impression which the case leaves on my mind is, that cannabis has a peculiar value and power in controlling the irregular movements of chorea, which ever and again are terribly distressing, and possibly even dangerous, to the patient; and it would be of no small moment to determine the extent and limit of its influence, and to ascertain whether or not choreic action, even in slighter cases, might not be moderated by this remedy.

As to the mode of administering the remedy, small and frequent doses proved both safe and effective, and great advantage appeared to arise from increasing the frequency of the dose rather than its amount. Believing, as I do, that cannabis Indica is a remedial agent of value in many and various maladies, I am prepared to recommend this mode of seeking its effects by frequent rather than by larger doses at longer intervals. Such a mode of prescribing it has not been usual; but I find, quoted from an American source, the account of a case of hiccup treated in this way by eight-drop doses of a fluid extract, administered hour by hour, in which recovery from an attack that had defied treatment for five days took place in a few hours. —*Edinburgh Medical Journal, March* 1869, *p.* 777.

25.—THE CALABAR BEAN IN ACUTE TRAUMATIC TETANUS AND STRYCHNIA POISONING.

By William Alexander, Esq., Dundonald, Ayrshire.

[The first of the two cases mentioned in the following article was a boy eleven years of age, in whom symptoms of tetanus appeared eighteen days after a wound of the hand by a chaff-cutting machine. Next day the report is :]

August 6th, noon. Opens mouth better, but with an effort. Tongue very brown. Marked opisthotonos, with frequent spasms, involving the entire body. Spasms excited on touching him or approaching his bedside. Cannot move himself in bed. Powders have operated once. Has had four doses Indian hemp. Pulse 130. To begin now with the following :—

℞. Ext. physostigmat. venenos. grs. viij.; sp. vin. rect. ℥ss.; syrup. simp. ℥ij.; aq. fontan. ℥iss. M. solve.

A teaspoonful to be taken in water every hour. To have beef tea and milk for diet.

8 p.m. Much in the same state. No more action from bowels. Head very much retracted. Back extremely bent. Abdomen flat and tense. Frequent spasms. Pulse 130. Repeat the purgative powders.

7th, 8 a.m. Slept sound during the night, vomited occasionally. The spasms and opisthotonos continue, but have not

increased in severity. Has had sixteen doses of the extract since noon yesterday, the last about an hour and a half ago. Pupils slightly contracted. Opens mouth better, and puts out tongue, which is still very brown. Pulse 110, soft. No action from bowels.

8 p.m. Had his extract every hour and a half up to one p.m., since which he has only had two doses. The contracted pupils, and jerking pulse at mid-day caused me to lengthen the interval between the doses. Opisthotonos with spasms continue. Pulse 90, soft. Breathing, calm, easy. No action from bowels since yesterday morning at eight o'clock. Had senna infusion to-day at four p.m., of which he vomited a part. Gave an enema of soap and water, which acted freely.

8th, 9 a.m. The spasms with opisthotonos were very severe after I left him last night. His father, who watched him most faithfully, had instructions to give the extract every hour, if necessary, and having done so, the boy was much relieved by midnight, and now continues so, though the spasms and opisthotonos are still present. Since one o'clock this morning he has slept for nearly two hours. Opens mouth much better, and puts out tongue well. Tongue very brown. Abdominal muscles relaxed. Pulse 96, soft and rather weak. To have sherry to-day, as he felt weak when his bowels were moved twice during the night. Stools very dark and fœtid. Finished his first bottle of the extract in solution about an hour ago, having thus taken eight grains of the extract in forty-five hours.

[During the rest of this day and the next the extract was given every hour, except when asleep. On the evening of the ninth an attempt made to give his extract at longer intervals was followed by a recurrence of the spasms and opisthotonos. By the 11th of August he seemed improving, but losing strength somewhat. He continued varying from day to day, the Calabar bean being given as before. Recovery ensued.]

The boy was most carefully watched by the parents, who had a discretionary power given them to lengthen the interval between the doses when the symptoms warranted them to do so; but in the various attempts they made it was invariably found necessary to resume its use every hour, or every hour and a half. In these circumstances, although the case might be looked upon as cured on the 19th, still I thought it advisable to keep up the action of the Calabar bean for some time longer, lest the spasms should return, and the treatment be prolonged. Although the spasms and opisthotonos were in this case severe enough, yet they never reached that degree of suffering which I have witnessed in former cases, all of which terminated

fatally. Nevertheless, I look upon it as a case of acute traumatic tetanus, taken in the incipient stage of the disease, and so thoroughly controlled by the action of the bean, that the more violent symptoms could not manifest themselves. I have every confidence in the action of the bean for relieving the spasms, even though it may not always be successful in curing a case.

In August of this year another case of traumatic tetanus came under my care, and was treated in the same way with a like favourable result.

G. B., aged 12 years, August 6th, had slight trismus, with inability to project his tongue. Complains of pain in each side of throat and over dorsal spine, not aggravated by pressure or percussion, and also of uneasiness at junction of upper with middle third of sternum on left side. On walking, his gait is unsteady, and, on turning round, he is observed to stagger, a thrill, as it were, passing through the body at the same time. Face has nothing of the tetanic appearance, and yet the expression is not natural; he looks as if he were about to cry, and does so when questions are put to him. Pulse 66, tongue slightly coated. Has a very small cicatrized incised wound, a quarter of an inch in length, in point of right thumb, and a small punctured wound in sole of left foot, neither of which have been of any depth. No other injury is apparent or admitted, except that, in play with other boys, he was rolled over by one of them, and has felt the pain in left side of sternum ever since. About three weeks ago, during the very hot weather, he suddenly became giddy, sick, and faintish, and was supposed by his parents to have a threatening of sunstroke, but had no treatment. Ordered him an active aperient, and to await the development of other symptoms.

August 7th. More evidence of tetanus setting in. Slight spasms, involving limbs, with more rigidity of jaw. Medicine has acted well. Stools brown; pulse 66. Repeat the purgative powder. Ordered the following:—

℞. Ext. physostigmat. venenos. grs. viij.; sp. vin. rect., ℥ss.; tinct. valerian., ℥i.; syrup. simp., ℥i.; aquæ, ℥iss. M. Solve.

A teaspoonful every two hours.

8th, 9 a.m. Having vomited the first spoonful of the extract, and the symptoms being slight, only half the quantity was given, and at long intervals during the night; but this morning the spasms are more frequent and severe. Belly tense and hard. Pulse 78, soft. Ordered the teaspoonful every hour, with discretionary power to allow a longer interval between the doses if necessary.

9th, 10 a.m. Had a teaspoonful of the extract every hour yesterday till four p.m., when he slept for five hours, and on awaking with a spasm, got it every hour during night. Slept none during night. Complains occasionally of the pain in cervical, but more commonly in dorsal region. Has pain now in epigastrium. Trismus continues, and spasms come on every hour causing him to cry out with the pain. Abdomen very flat and tense. Bowels opened twice; stools very dark and offensive. Pulse 78, soft. Breathing easy. Vomited several times during night, as often after his food as his medicine. Cannot now lie in bed, but sits in semi-erect position, propped up with pillows, head bent forward—emprosthotonos. Continue the extract every hour, and give purgative powder at night.

11th, 10 a.m. Has gone on in the same way, the spasms with pain in back and epigastrium, recurring every hour, till this morning at one o'clock, when his attendant became afraid to give the extract so frequently, and the spasms have since increased in severity and number, the cries of the boy during the spasms being painful to listen to. Ordered ice bags to spine, and to have the extract every hour, with the purgative at night.

[We omit the reports of the case until Sept. 8th.]

8th, noon. Been free from spasms since the 3rd instant, and had none of the extract since the morning of the 6th till last night at 12 o'clock, and again this morning at 8.25, having on these two occasions complained of pain in dorsal region, with slight spasms, probably the result of over-exertion or fatigue, as he has been out of bed daily since the 3rd, and on the 6th sat up all day and exerted himself more than he had done. Is at present free from pain. Slight bending forward of dorsal vertebræ is visible when he sits or stands. Walks with a stiffness at hip and ankle-joint, but able to go out of doors to-day, leaning on an arm. Tongue clean. Pulse 72. Bowels regular; stool natural. Belly fuller.

13th. Is now quite well.—*Glasgow Medical Journal*, *Nov.* 1868, *p.* 41.

26.—CASE OF TETANUS, WITH REMARKS.

By Dr. E. Watson, Professor of Physiology, Anderson's University, and Surgeon to the Royal Infirmary, Glasgow.

On the 26th of June, 1868, I was asked by Dr. Fergus to see a patient of his who was affected with tetanus. I found that the disease had been coming on for some days, and that its cause was very obscure. The patient was a young man, twenty years of age, who had for some time been annoyed

with a papular eruption on the skin of the arm, for which he had been treated by a chemist in town, without applying to his medical attendant. I therefore inquired of this chemist what drugs had been used by him, but found that they were sufficiently safe and simple. Some of the papules were suppurating when I looked at them. The patient had also received a slight cut with a piece of copper on the same arm, but the wound was quite healed.

When I visited the patient his back and extremities were very rigid, and he was taking frequent fits of opisthotonos, but his face was less affected than usual, and he could swallow well. I therefore commenced the treatment with good hope of the result.

At first he took the tincture of the bean made by percolation, but as soon as possible it was changed for the following tincture, in using which one can be more precise as to the doses administered :—

℞. Ext. physostigmatis venenosi, grs. viij.; aquæ bullientis, ℥ss.; sp. vini rectificati, ℥iss. M.

The extract is dissolved in the water at a boiling temperature, and the spirit is gradually added. The fluid is then filtered, when a clear sherry-coloured tincture is obtained. I have kept this tincture for three months without any turbidity or other change taking place in it, and I believe that it is sufficiently stable for all practical purposes. Every ten minims contain one-twelfth part of a grain of the extract, which is a good dose to begin with in an adult.

Such a dose was given every hour at first, with the effect of greatly relaxing the stiffened muscles of the back and extremities. His bowels were likewise freely moved on the 26th, by a dose of castor oil, with a drop of croton oil mixed with it. He had short sleeps during the night, but next morning the spasms could still be excited, though neither so readily nor so severely as formerly.

During the first part of the 27th he had his doses of the tincture every half hour, and felt so much the better of each dose that he constantly asked for them himself, and would have taken them even oftener. By mid-day his body was more relaxed than ever, so that he could move himself in bed, and raise his head from the pillow. I therefore left him in the care of Dr. Fergus, with particular instructions how to proceed. These were carefully carried out by him, and the case went on most favourably. The patient's hopes were completely restored, and he spoke of soon being at business again. The administration of the bean was continued every two hours during the

night, and in the morning (28th) Dr. Fergus found that it had considerably affected his patient with its depressing action. In fact, the patient fell into a syncope when Dr. Fergus was present, but by admitting fresh air and rubbing the chest he recovered and seemed much improved. Unfortunately, however, after Dr. Fergus had left, he again fell into a similar state, and, as there was some loose mucus in the throat his friends turned him round to allow it to fall out; on their doing this, he was seized with a violent and universal paroxysm, in which he died about ten a.m.

On returning to Glasgow, which I did on the following morning, I was greatly mortified at learning the result of this case. It is the first and only fatal case which has occurred to myself in which the bean has been fairly tried. I did regret that the patient had been perhaps roughly, because hurriedly, turned round upon his face, for no doubt that was the exciting cause of the fatal convulsion. Had the milder, and sufficiently effective means, adopted by Dr. Fergus, been again employed, I think the issue might have been different. But whether this be so or not, I think we may learn from this case the following lessons :—

1. That in the most violent cases of tetanus the bean may be so administered as to diminish the force and duration of the convulsions.

2. That the bean does not rapidly counteract, far less change the morbid lesion in which the proximate cause of tetanus consists. In the preceding case the spasms were greatly mitigated, and yet the disease still existed, in a latent state no doubt, but yet capable of being roused into great and even fatal activity.

3. That it is, therefore, of great importance to commence the use of the bean early in all cases of tetanus, so as to give it time to act before the disease has become matured. In the preceding case the disease had reached its greatest violence before the medicine was begun at all.

4. That in the state of depression, which is one of the physiological effects of the bean, the patient can very ill bear the renewal of the convulsions. The case is an example of this, and I have often witnessed the same thing in my experiments on the lower animals with strychnia and Calabar bean. The gentlest means for restoring the feeble respiration of the patient when so affected, should alone be employed, and the mouth or throat should be cleared by means of the finger, or by any suitable substitute for it that comes first to hand.

The cases of tetanus treated by the Calabar bean, as I have recommended it, now amount to the following numbers :

	No.	Recovered.	Died.
My Infirmary cases - - - -	4	3	1
Case treated by Dr. Fergus and myself	1	0	1
Dr. Alexander's cases - - -	2	2	0
Dr. Campbell's case - - - -	1	1	0
Total,	8	6	2

These were all acute traumatic cases of tetanus, some of them very severe, and all of them warranting the most unfavourable prognosis. Indeed I believe that a similarly good result could not be shown in such cases by any other kind of treatment. It ought to be remarked, likewise, that one of my fatal cases (Lancet, 1868) was really not treated at all, as the man was dying when I saw him, and he only doubtfully swallowed one dose of the remedy.—*Glasgow Med. Journal, Nov.* 1868, *p.* 51.

27.—CASE OF STRYCHNIA POISONING.

By Dr. John W. Keyworth, Birmingham.

On the 23rd of July, 1867, at 7 a.m., I was sent for to a female patient of slight suicidal tendency, who had taken, at 11 o'clock the night before, a packet of Battle's Vermin Killer (containing it is stated, 3 grs. of strychnia). The body and limbs were perfectly rigid with spasm, which, when occasionally relaxed, was excited by merely blowing in her face, or by the shaking of the floor in walking. She had been in this condition since 2 a.m., gradually becoming worse. She was speechless, but conscious, and her pulse very rapid and feeble. Her face was livid. The jaws were constantly fixed. Having recently read your paper, and seeing also that the case was almost hopeless, I sent up to the Eye Infirmary for some of the wafers, Failing there, I obtained from Messrs. Southall of this town. pharmaceutists of the first order, some tincture of Calabar bean. They could not give me any information as to the dose. I gave 30 drops every half hour till two drachms had been taken, pouring it into the mouth where a tooth was absent. The effort of swallowing produced violent spasm. After each dose the attack grew less frequent and strong, and I then gave two half drachms at intervals of an hour, then 15 drops every two hours. Altogether half an ounce was taken. The pulse then became extremely weak, the spasms almost ceased, but the woman could scarcely speak or swallow. At the end of some hours she remained very feeble, quiet, but sleepless, and her legs and arms "felt like lead," and were utterly immovable. This gradually subsided, but she could not stand or walk for four or five days, and was three weeks before she fully recovered. The poison was taken in gin, and appeared, from the inspection of

the cup, to have been wholly taken. An hour and a half afterwards she appeared, her friends said, "to be in a fit," and shortly afterwards became "convulsed." The effect of the Calabar bean in relaxing the spasms was apparent in about twenty minutes after taking the first dose, and became more apparent and decided after each repetition.

This is the only case in which I have as yet had an opportunity of trying the antidote, and of course it proves little; but I shall certainly be disposed to repeat it in any analogous case. The instance was favourable, inasmuch as from the time the poison had been taken, and the condition of the patient, emetics and the stomach-pump were out of the question. And as strychnia appears to destroy life chiefly, if not entirely, by its action on the muscles, there would seem every reason why with it, as well as tetanus, this antidote should be effectual.—*Glasgow Medical Journal, Nov.* 1868, *p.* 54.

28.—CONTRIBUTIONS TO THE ELECTRICAL TREATMENT OF PROGRESSIVE MUSCULAR ATROPHY.

By Dr. C. Hilton Fagge, Assistant Physician and Medical Registrar to Guy's Hospital.

["Progressive muscular atrophy" is also known as "Wasting palsy" and "Cruveilhier's paralysis." It always occurs in the muscles of the upper extremity, but is quite distinct from scrivener's palsy. Within the last few years Duchenne has described a form of paralysis resembling true Cruveilbier's paralysis, but really a different affection. The characteristic points in Duchenne's paralysis, is that the disease is hereditary and attacks in succession all the males of a family. During the last two years ten cases of Cruveilhier's paralysis have been admitted into Guy's Hospital.]

In giving brief notes of these cases, I will first mention those which have been treated by the *continuous current* alone, after the method introduced by Remak. This consists in the employment of a "constant" battery, having 100 cells, of which a variable number are used, according to circumstances. One pole, the positive, is applied to the back of the head or neck, generally to the mastoid process; the other, or negative pole, is placed over the spine, not higher than the fifth cervical vertebra. When this is done, contractions are sometimes observed in the fingers, or in other paralysed parts,—which contractions Remak has termed "diplegic." The current is allowed to pass for a quarter of an hour at a time, and its application is repeated daily. This method appears to be entirely empirical, having no theoretical

foundation whatever; but it must be admitted that in some cases success justifies its use.

CASES TREATED BY THE CONTINUOUS CURRENT.

Case 1.—(Reported by my clinical clerk, Mr. Bransford Edwards).—G. P. H., age 27, admitted into clinical ward, under my care, June 12th, 1867. He is a harness maker. About eight weeks ago he began to feel weakness in his arms, and became unable to grasp firmly with his hands. He also had *tingling* sensations in his arms. The muscles of the forearms, except the supinator longus, were considerably atrophied; and the interossei, and other muscles of the hand, were also much wasted. The movements of the hands were very imperfect; for instance, he had great difficulty in unbuttoning his shirt. Tremor was not present in any marked degree; I think I observed it slightly in one of the muscles of the left fore-arm. On testing the muscles with the continuous current, it was found that thirty-five to forty cells were required to produce contractions in the extensors of the forearm; whereas the biceps reacted to twenty cells. The medicine which was prescribed for him, besides an occasional purgative, was a mixture containing three grains of iodide of potassium, which he took three times a day for seven days, when it was discontinued, in order that the value of the electrical treatment might be more surely tested. This treatment consisted in the application of the continuous current to the spine (according to Remak's method) every day, for fifteen minutes at a time. It produced a strong galvanic taste, and a tingling sensation in the right arm (the electrode was applied beneath the *right* auricle). The fore-arms were wrapped in cotton wool, and placed upon splints. After seven days of the treatment the splints were removed, and it was then found that there was decidedly more power in the grasp. At the end of sixteen days he could dress himself with ease, and could write tolerably well. He could not bear so strong a current as at first; twenty-five cells now produced distinct contractions in the arms and legs simultaneously. The muscles were fast regaining their firmness and tone. He continued to improve. On August 22, it is noted that he could write several letters in the day. He went out nearly well, on September 21, 1867. I have since heard (Oct. 1868) that he has remained free from any further symptoms of the disease. Besides the affection of the arms, this man had likewise weakness of the lower limbs; from this he recovered at the same time.

Case 2.—(Reported by Mr. Colson).—J. H., age 27. The disease had begun two years before, with numbness and coldness in the thumb of the right hand, gradually extending to the other fingers, and to the fore-arm. Subsequently the left hand

became affected, but to a less degree. He was in the army, and therefore was not called on to use his hands unduly. On his admission the affected muscles were found to be greatly wasted, the thenar and hypothenar eminences being quite hollowed out. He had more loss of power on getting out of bed in the morning than at any other time. He was ordered to take julep. iodinii comp., and to use the continuous current; no marked improvement, however, took place, and he went out on Dec. 31, 1867. He continued to attend as an out-patient, but without result, and when I last saw him he was still *in statu quo*.

Case 3.—(Reported by Mr. H. K. King).—W. R., age 49, a saddler, admitted into the clinical ward, under Dr. Moxon's care, July 2, 1867. For about twelve months he had noticed his thumb to be getting weak; and for six months he had found that he had difficulty in holding a pen. There was much wasting of the flexors of the forearms, and of the thumb muscles. He could not grasp with the thumb, nor could he extend the last two joints of the fingers. The case, in fact, was a well-marked example of Cruveilhier's paralysis. Treatment with the continuous current was commenced on July 8. It led to no very decided improvement. He went out on Sept. 9th.

CASES TREATED BY INDUCED CURRENTS.

Case 6.—(from notes by Mr. Barry).—G. L.——, age 53, admitted under my care, Feb. 6, 1867, with very advanced progressive muscular atrophy of the upper limbs, and a similar affection commencing in the thighs, as was shown by muscular tremors and shooting pains. The disease had begun four months before. When this patient was in the hospital, the continuous current apparatus was not available, and therefore the affected parts were Faradized as regularly as possible. The biceps was the only muscle of the upper limb in which distinct contractions were produced by the induced current. He went out on June 4, unrelieved. After returning home he improved considerably, so far as the lower limbs were concerned. I went to see him at Orpington in the course of the summer; and he walked with me for a mile, or a mile and a half. His arms were still *in statu quo*. I have since heard that he is dead.

This man was a plumber, and had a well-marked blue line on the gums. I at first regarded his case as one of lead paralysis, but I think there is little doubt that this view was incorrect. He had had very little to do with lead for two years before; he had never had colic; there was not the usual dropping of the wrists, flexion and extension being impaired more equally than is the case in lead paralysis; he had taken iodide of potassium as an out-patient without benefit; and the intractability of the

symptoms is quite unlike what one sees in lead paralysis. It is to be regretted that we could not test the action of continuous currents on the affected limbs; their effects are supposed to afford a critical distinction between the two diseases.

Case 7.—(from notes by Mr. Chapman).—G. M——, age 47, admitted under my care March 13, 1867. He was affected with well-marked progressive muscular atrophy of seven months' duration. The muscles of the shoulders were much wasted, and affected with marked twitchings. He was ordered to take mist. quiniæ c. tinct. nucis vomicæ ℥ij, *ter die*, and to be galvanized every other day. He improved slightly, being able to raise his arms better. But there was no very decided benefit. He went out on June 4.

Case 8.—A. C——, age 24, admitted under Dr. Wilks' care into the Clinical Ward, July 4, 1866. She said that she had never been very strong, and that since the death of her mother, five years before, she had had bad health. Her existing symptoms, however, dated from two years back, when she "entirely lost the use of her hands, and ultimately of her legs also." The fingers and toes became firmly flexed. On her admission they could not be extended, even by force, and they presented a well-marked "griffin's-claw" appearance. The muscles of the extremities were wasted to an extraordinary degree, the interossei of the hands having almost disappeared, so that the finger and thumb seemed to meet between the metacarpal bones. She had, in fact, the appearance of a mere skeleton covered by skin. She lay on her back in an utterly prostrate condition, and could only raise her hand a few inches from her bed. There was a distinct "blue line" on the gums. The water which she had been drinking was analysed by Dr. Stevenson, who found it to contain half a grain of lead in the gallon. She was, in the first instance, ordered to take iodide of potassium, and after three weeks Faradisation was commenced. She began to improve gradually but surely; and on Oct. 2, when she was transferred into Lydia Ward, she could extend her fingers, and feed herself tolerably well with a knife and fork. The nutrition of the muscles had gradually improved. On Oct. 20, she tried to walk with a chair, but could manage only a few steps at a time. On Nov. 8, she walked across the ward. On Dec. 3, she menstruated for the first time during her illness. On Jan. 7, 1867, she went out, well.

This patient has since visited Guy's Hospital, and was then well nourished, healthy-looking, and able to walk as well as ever. Dr. Wilks speak of the case as perhaps the most remarkable cure (or recovery) that has ever come under his observation. —*Practitioner, Dec.* 1868, *p.* 345.

29.—CASES ILLUSTRATIVE OF THE TREATMENT OF PARALYSIS BY THE APPLICATION OF COLD OR HEAT ALONG THE SPINE.

By Dr. JOHN CHAPMAN, Physician to the Farringdon General Dispensary.

Case of Apoplexy with Hemiplegia.—On December 3, 1864, I was called to see a gentleman, aged 55, whom I found in a state of profound stupor; he could not be roused, the right arm and leg were paralysed, the leg less completely so than the arm. When the hand was pinched severely there was no evidence of sensibility; the left hand was of a markedly dusky hue, the nails being slightly purple; the temperature of the left side was considerably lower than that of the right, and the pulse which was 82, was much feebler at the left than at the right wrist; the head was hot; both eyes were closed, the left one being protruded abnormally and slightly lachrymose; the face was drawn to the left side.

I applied an 8 inch spinal water-bag, containing water at 120° Fahrenheit, to the cervical and upper dorsal region of the spine. This bag was ordered to be refilled at frequent intervals, so that the application of heat might be continuous during the day or whenever the head should be found hotter than natural. A spinal ice-bag was also ordered to be applied at once during three-quarters of an hour to the lower third of the spine, and to be repeated the same afternoon. In less than twenty minutes after the hot-water bag was first applied, the head had become much cooler than before, and within twelve hours some degree of returning consciousness was evinced. The treatment was modified according to symptoms as the case progressed. The patient steadily improved day by day. At the end of a week he was talking with facility; on the 23rd of the next month he walked between one and two miles two days in succession, and in February he called upon me, and reported himself quite well, and impressed me as being so both mentally and physically.

December 3rd, 1865, exactly a year after the date of the above mentioned attack, I was called to this patient again. On the previous day he became suddenly giddy and incapable of standing. Shortly afterwards he vomited and was relieved, but his speech, which was previously perfect, had become much impaired, and immediately before I was summoned he suddenly lost the power of speech, his eyes becoming, as his wife said, "fixed and glassy." Ice was applied to the spine and benefited him considerably. I found him much better again, and his speech, though greatly impaired, was intelligible. I ordered ice to the lumbar region 45 minutes at eight p.m., a saline mixture and light food.

After passing a good night, vomiting came on at 5.30 a.m.; consciousness and the mental faculties were greatly impaired, and the power of speech was so far lost that he was quite unable to make himself understood. Ice was applied at nine a.m., and at ten a.m. I saw him, when he had somewhat improved; he was conscious, and he had recovered his power of speech to a slight extent; but his mind was dull and confused. The face and tongue were drawn to the left side, and both arms were slightly paralysed. Pulse 76, full and fairly strong in the right wrist, extremely slight and feeble in the left. I requested ice to be applied during thirty minutes every two hours, to the lumbar region; and the water bag at 115° Fahr. to the cervico-dorsal region during ten minutes, also every two hours, but alternately with the ice. The saline mixture was continued; and the patient was nourished with beef-tea. In the course of two days he was very greatly improved in all respects; the heat and cold were then applied at more distant intervals, and on the following day (December 7), I found the head clear, the speech fairly recovered, and the pulse in the left wrist much increased in strength and volume. The use of heat was then discontinued: and I requested the ice-bag to be applied along the lower two-thirds of the spine half-an-hour, and the saline mixture to be given three times a day. By the 21st of the month the patient had quite regained his former health: his mind was clear, his speech distinct and normal; his face symmetrical, and his pulse in the left wrist as strong as that in the right. The medicine was discontinued, and the ice after being applied once daily until the 26th, was left off at the request of the patient, who, at that date, took a long walk alone.

Case of Apoplexy, with Hemiplegia.—On March 14th, 1865, I was called to a patient at Brighton, a stout woman, aged 60, who, in the afternoon of the previous day, being excessively flushed, with a dull heavy expression, staggered towards her bed and fell down senseless. The physician, who was immediately called in, said she was dying. He stayed with her until three o'clock of the following morning, and, on leaving, sent a woman to "lay her out." As stated by a spectator, "she gasped, seemed to breathe only at intervals, was blue round the mouth, clayey-looking; the whole features seemed to sink; her head, shoulders, arms, and legs were quite cold, and her face was covered with clammy sweat." She remained in this state during forty-eight hours. At the end of this time I visited her. The head and face were strikingly cold and death-like; the eyes exuded a thick gluey fluid; the left pupil was dilated and immoveable in the presence of light, the right pupil was contracted; the right side was more dusky, and somewhat colder even than the left; the face was drawn to the left side.

On tickling the soles of the feet, there was a slight movement of the left foot; none of the right.

In the treatment of this case, my efforts in the first instance were directed to produce alternate contraction and relaxation of the cerebral blood-vessels, in order to effect movement of the stagnant blood within the head. Accordingly, I applied heat on each side of the upper third of the spine for a few minutes, then removed the bag, while still hot, and shortly afterwards re-applied it. Within fifteen minutes of my first application to the spinal region, an area of about two and a-half inches in diameter in the middle of the forehead became quite warm. Before twelve hours had elapsed, the whole head and face became warm; and within twenty-four hours, or by the evening of the 16th of March, her whole body was warm. On this day she saw a cup of beef-tea in the hands of an attendant, and opened her mouth as if asking for it. The same evening she was believed to have recognised her daughter. From that date she steadily progressed in intelligence, so that by the end of the month she appeared to understand all that was said to her, could appreciate a joke, and could answer questions by monosyllables. She began to gain some power on the paralysed side, and, as the weeks passed, her improvement in intelligence and power of expression gave promise of her ultimate recovery, though, of course, with the probability that she would continue more or less hemiplegic. She lived about three months; but, unhappily, owing in part to the neglect of her nurse, sloughing over the sacrum came on unperceived, pyæmia followed, and proved fatal.

In both these cases the great therapeutical efficacy of the spinal hot-water bag was signally manifested. One of the sons of the first of the two patients, a very intelligent young gentleman, who sat up at night with his father, expressed himself much astonished by the power of the water-bag in reducing the heat of the head, and volunteered the statement that when his father's breathing was stertorous, the application of the bag speedily caused it to become quite tranquil. I may add here that, in the case of a patient under my care, who is liable to become unconscious by reason of a great and sudden afflux of blood to the brain, the application of this bag at a temperature between 115° and 120° Fahrenheit, will invariably cause the hot head to become cool, and simultaneously consciousness returns.

It will be observed that I applied heat to the upper portion of the spine, and cold below, at the same time, in the first of the two cases just reported; and I may add that, in the second case, I often had occasion to do the same. The simultaneous application of heat above and cold below, or the reverse, so far from

resulting in the neutralization of the effects of the one by the other, actually augments greatly the force of each. For example, while heat to the upper third of the spine effects the contraction of the cerebral arteries, and so lessens the amount of blood in the brain, cold along the lower third of the spine, by causing the dilatation of the arteries of the pelvis and lower extremities, increases the amount of blood in those parts, and, therefore, to a proportionate extent, derives it from the chest, upper extremities, and brain. Hence, if I wish to exercise only to a moderate extent a sedative influence on the brain, I apply the lumbar ice-bag; but if I wish to act more vigorously, I apply the double-column hot-water bag to the upper third of the spine; if more vigorously still I use the two simultaneously. The two cases just described afford most satisfactory illustrations of the unprecedentedly great remedial power in cases of apoplexy which this method of treatment affords. Of course, the sooner after the "stroke" treatment is adopted, the greater will be its efficacy. My experience, however, enables me to say, that in cases of paralysis of several years' standing, great good may be often be done by means of these spinal applications. In the appendix to my pamphlet on "The Functional Diseases of Women," I published a case, the chief features of which are as follows:—

Case of Chronic Hemiplegia, with rigidity of the left upper extremity, coldness of the paralysed side, headache, dorsal hyperæsthesia, and constipation.—A boy, aged 13, afflicted with hemiplegia (left side), was brought to me June 1, 1863. At this date I made the following notes of his condition:—Has a florid complexion, looks healthy, and is very intelligent. Complains chiefly of being unable to use his left arm. He cannot raise it above his head, as he can the right one—being unable to lift the hand higher than the face. The fore-arm cannot be completely extended, and is firmly fixed in the prone position. The wrist and hand are not only powerfully drawn to the ulnar side, but so firmly flexed on the fore-arm as to resist whatever extending force the patient can apply with his right hand. If by additional external force they be brought into a straight line with the fore-arm, immediately they are released from it they return to their abnormal position. The metacarpal bone of the thumb is strongly adducted and held (immovable by the patient's will) in the palm of the hand. The four fingers are permanently bent inwards, the middle one being flexed over the end of the thumb and deeply indented by the thumb-nail. The third phalanx of the index finger bends backwards on the application of the slightest pressure, and is incapable of offering any resistance—that fasciculus of the flexor profundus digitorum, which converges into the tendon of this finger, being paralysed.

The whole upper extremity of the left side is considerably shorter and smaller than that of the right. The left leg is also shorter and thinner than the right, although the arrest of growth has been less in the leg than in the arm. The patient cannot stand on the left leg, and when he attempts to extend it completely, he feels a stiffness at the top of the calf. If he places the heel on the ground, and then lifts up the forepart of the foot, it immediately drops—he cannot sustain it. He can bear no weight on the fore-part of the foot, and cannot bend his toes either upwards or downwards, except in a very slight degree. The tendo-Achillis has been divided. The right pupil is slightly the largest; the tongue deviates to the left side. The patient suffers from frequent and long-continued headache, on an average three times a-week; if he gets up with it, it lasts all day. His back is peculiarly sensitive; he bursts into hysterical laughter the moment it is touched. The whole of the left side is habitually cold. Bowels constipated: not opened oftener than every other day. The patient's malady originated, his father says, in a fall on his left side when he was six months old. From this time the elbow was observed to be slightly bent, and the fore-arm always pronated. In his twelfth month the weakness was first noticed in the leg. In his third year he was taken to L'Hopital des Enfants Malades at Paris; then to "a private doctor," who bandaged the arm and hung a weight to it; he subsequently attended the Orthopœdic Hospital in London, where, in addition to other treatment, by galvanism, &c., the tendo-Achillis was divided; and, finally, he was a patient during two years at another Metropolitan Hospital.

My treatment of him consisted mainly in the application of ice along the spine, the only other measures adopted were, washing him all over every morning in cold water; clothing him in flannel down to the wrist and ankles; rubbing the back and paralysed side; galvanism as mentioned below; and making frequent efforts to supinate the fore-arm.

The patient's headache ceased from the time the ice was applied. By the 8th of June, the left arm and leg became quite warm; by the 15th, the bowels had become open daily, the preternatural sensitiveness of the back had ceased, and when the left heel was placed on the ground, the fore part of the foot could be held up during at least five minutes.

As early as July 14, the power of the whole left arm, either for movement or lifting objects, had greatly increased; the hand was much less flexed and drawn to the ulnar side than formerly; the metacarpal bone of the thumb, which even a fortnight before needed a good deal of external force to draw it from the palm, could then be abducted by the will of the patient himself; he could open the fingers, and extend them completely;

and the third phalanx of the index finger, formerly paralysed, he could flex strongly. His left leg also continued to grow stronger: he could stand alone upon it without support for a considerable time; the stiffness formerly felt at the top of the calf, when he attempted to extend it, was completely gone; he could hold up the fore part of the foot when the heel was on the ground as long as he liked; he could move the toes, especially upwards much more freely, and, as he said, he walked "much better" than formerly. I ordered the extensor muscles of the fore-arm, especially those of the thumb, to be galvanized frequently; the treatment in other respects to continue the same.

The last record which I made of this case was July 28, and was as follows:—When the hand is in a passive state it is now quite straight in relation to the fore-arm, and its grasping power is notably increased. The patient can walk on either the heel or toes of the left foot, and in ascending stairs can bear all his weight so completely on his left toes, as to be able to go up by advancing each foot a step alternately. The bowels continue to be opened daily; the left side continues remarkably warm, and during the two months of treatment headache has never been felt.

As the radial side of the fore-arm has been turned inwards ever since infancy, it is probably held in that position, not only by the pronator muscles, but by adherent tissue developed between the immobile structures. Holding this opinion, I directed the boy to make continuous efforts forcibly to supinate the fore-arm, and already the rotating power has increased. If his left tendo-Achillis had not been divided, he would now walk I believe, with only such a slightly perceptible limp as would be due to the difference in length of the two legs; there is more unevenness in his gait than that difference will account for, and I ascribe it to the operation which he underwent. Indeed, he could walk better, he says, before the operation than afterwards; and he is probably right, for he also says that before the operation the muscles of the calf were fully developed, whereas afterwards they gradually wasted.

As in the treatment of cases of paralysis of long standing, medicines are, notoriously, of slight avail, and as any merely theoretical considerations which I may advance in favour of the method I am advocating will not be likely to exert much influence, I shall, I hope, be permitted to adduce, as evidence in support of that method, the reports of two other cases which were published in the Journal of Mental Science.

Case of Hemeplegia, with persistent headache; impairment of intelligence and vision; obstinate constipation; and deficient expulsive power of the bladder.—H. D. J., suffering from hemiplegia, consulted me, August 12th, 1863. He can lift the right elbow

nearly as high as the shoulder, when the arm is flexed; but when extended, only as high as the mamma. The supra-spinatus muscle of the right side is considerably wasted. Can flex the fore-arm vigorously, but can extend it only imperfectly and feebly. Can flex the fingers and thumb closely, but not powerfully; cannot extend the fingers beyond a right angle with the palm; cannot extend the thumb. Cannot stand on the right leg without support; it is not wasted. Cannot extend the toes except very slightly; can flex them better, but much less than he can the toes of the left foot. The right foot and leg, as high as the knee inclusive, are habitually cold; so cold that even now he has a fire every night to warm them before going to bed. Drags his left foot, and wears the toe of his shoe out in consequence.

Has continuous pain on the right side of the head round the ear, sometimes extending to the back and front of the same side. Has constant singing in the right ear. Has paralysis of the sixth nerve of the left side. Has a little pain in the left eye; cannot read test-type "12" with it; with the right eye can read test-type "3" with difficulty. Tongue deviates strongly to the right side; tactile power of tongue and of cheeks on each side the same. In the palm of the hand feels two points six lines apart on right side, four on left. Intelligence considerably impaired. Pulse 120, the same strength on both sides. Bowels so constipated as to be confined for a week together if no medicine be taken, the stools being very hard. Even with several strong doses of purgative medicine in succession, very often no action of the bowels is effected. The expulsive power of the bladder is "greatly impaired." He sometimes passes twenty-four hours without making water. The patient is generally very impatient and irritable.

After the treatment, consisting chiefly of ice to the spinal region, varied from time to time according to the requirements of the case, had continued until September 24th, the following was the condition of the patient:—

He can now raise his right arm vertically above his head; can extend his fore-arm vigorously, and all the fingers and the thumb completely. Can balance himself on the right leg without support. Can extend and flex the toes of the right foot very considerably, much more than formerly. The right leg decidedly warmer than before using the ice. In walking he can now put his left foot flat, there being no dragging of it as formerly. The pain of the right side of the head and the singing of the right ear, though not quite gone, are markedly lessened. The pain in the left eye is still felt at times but it is also much lessened. The paralysis of the sixth nerve of this eye continues about the same. Can now read test-type "$1\frac{1}{2}$" with the right eye, and

"8½" with the left. Feels two points at five lines apart in each palm. Intelligence very greatly improved. The bowels are now easily acted on by a slight dose of aperient medicine, and are thus open at least every other day. The expulsive power of the bladder is much greater than before treatment; in fact, quite normal. Urine is now voided about three times in the twenty-four hours.

Case of Paralysis of the muscles of the tongue and throat.—September 13, 1863, I was consulted by Mrs. ——, who, about four years ago, lost the power of her right hand for a time, but recovered it. A year later she had an attack of paralysis of the right arm, lasting only for a few days. The face was drawn to the right side, and the speech became "thick." She has never walked so strongly since this attack as she did before it. She had a third attack about thirteen months ago, when, having gone to bed well, she rose in the morning, and went to call her daughter, but found herself unable to speak. The arm was not affected at all this time. Both legs are now very weak, the right one being much the worst.

The tongue is still paralyzed, but its sensibility is normal. She can now protrude it slightly, and move it from side to side, but cannot speak at all. Formerly the tongue was stiff, and could not be protruded.

During the last two months she has become able to swallow fluids with difficulty, only a teaspoonful at a time. Has all her food minced, being unable to chew it, because she cannot guide it in her mouth. Uvula straight. Pupils equal, and sight fairly good. Forehead, face, submaxmillary region, decidedly cool; upper extremities habitually cold. Sleeps well; appetite good; bowels regular. Goes out daily to walk, but feels a great stiffness in the limbs, particularly in the right leg and arm. The patient writes on a slate—"My nerves are greatly shaken; the most trifling thing makes me laugh or cry without any cause. I cannot account for this attack in any way. I have tried blisters, strychnine, galvanism, and homœopathy, without any effect. I have no headache nor pain of any kind, but often feel as if a band were bound round my head and throat (more round the throat than the head); and going up or down a single step, I fancy I must fall, though I know it is only a nervous feeling." I requested her to apply ice, until it melts, along the upper half of the spine twice a day.

September 20th. The patient looks better; the hands have been always warm since the treatment began, becoming so in three minutes after the use of the ice. Her expression is improved; she looks healthier, stronger. Pulse 92; tongue clean, bowels regular. ℞. Ammonii bromidii gr. v.; potassii iodidi gr. iiss, ter die.

September 27th. Feels very well; arms, but not hands, warm; bowels regular. Face often flushes while the ice is on. Can eat better, and can say "Helen" and "No." To make the hands warm by putting them in hot water, by friction, and by warm gloves. To continue the medicine already prescribed, once daily, and to take of ferri carbonatis cum saccharo gr. x, bis die.

October 3rd. Much the same, but has a little more power in the tongue. Can say "nothing." Bowels regular. Pulse 104. Continue the ice and the pills, and keep a roll of cotton wool beneath the lower jaw.

11th. Is generally better. Can say "Yes" and "Fire" and all the letters of the alphabet except "w" and "y." The wool beneath the jaw has much increased the temperature there. Is always warm, *except just after dinner;* she has not the ice on then. To continue the pills, to put the ice-bag next the skin, and to suck jujubes in order to exercise the tongue.

17th. Can now say "Bacon, finger, apple, paper, Mary, box." Hands warm, feet also. Pulse 100. Bowels regular. Tongue deviates to the right. Swallowing improved; takes a wine-glassful of porter daily. ℞. Potassii iodidi gr. iij, bis die. Continue the ice and the jujubes, and make continual efforts to speak.

I never saw this patient again.

Case of Chronic Hemiplegia, with extreme constipation and coldness of the paralysed side.—F. J., aged 27, consulted me Nov. 6th, 1863. He had to be carried into my room. Became paralysed seven years previously. The elbow is immovably flexed, the fore-arm is pronated, the fingers and thumb are powerfully flexed into the palm of the hand. Can raise the right leg a little, but cannot flex it at all, the foot is drawn inwards, cannot move the toes in any way. The tongue can be only so far protruded as to get its tip over the teeth, can drink with great difficulty, and only very slowly, can bite, but cannot grind his food. Has wholly lost the power of speech. Breathes stertorously, and is often afflicted with an uncontrollable sardonic laugh.

Temperature of right hand 83° Fahr., of left 87°, of right leg 84°, of left 89°. Bowels habitually costive, open about twice a week, sometimes only once if aperient medicine is not taken; makes water with distressing frequency.

The patient came to me from Ireland, whither he returned after visiting me once. I ordered ice to be applied along the whole spine three times a day. Owing to his adverse circumstances the treatment was continued only a short time. May 18th, 1864, he wrote to me as follows:—"When three weeks had elapsed [after the date the treatment began] an obstinate

constipation, from which I had suffered for years, seemed cured. The temperature of my paralysed hand rose considerably, and for the first time for six years I hobbled about with a walking cane, and continue to improve."

In answer to an enquiry concerning his condition, which I subsequently addressed to him, this patient wrote to me, May 7th, 1866, that "since the very imperfect trial of the ice treatment" immediately after he first consulted me, he had "failed in procuring ice except for a day or two," when, as he said, "we had frost here;" that, nevertheless, his improvement had continued; that he had begun to "mumble a few words;" that, "under favourable circumstances the palsied side is as warm as the other;" that "the bowels act very regularly;" and that, in respect to the excessive micturation with which he was troubled, "there is a grand improvement; for the last few weeks that failing has all but vanished, though it was nearly nine years old."

I regret extremely that this patient could not continue the treatment I advised; it is evident that it was doing him great good; and, to the extent of the benefit derived from it, the case would have afforded a still more decisive illustration than it is already of the remedial efficacy of the method in question, as well as an answer to an eminent London physician who saw the patient with me, and who then said to me, "Well, you don't expect anything can be done here, do you?"—*Medical Press and Circular, May* 29, 1867, *p.* 502.

DISEASES OF THE ORGANS OF CIRCULATION.

30.—DIGITALIS IN DISEASE OF THE HEART.

By Dr. J. Milner Fothergill, Morland, Westmoreland.

Both the experiments of Handfield Jones and Fuller show conclusively that in digitalis-poisoning the heart is found in a state of tonic contraction. Clinical observations, which of course, are much more numerous than physiological experiments, show also that under digitalis, in many cases an irregular pulse becomes much steadier, the beats becoming more equal and regular; clinical observation will show, too, yet another fact, not by any means so well known, that where a heart, with or without valvular disease, is beating so feebly that its apex-beat cannot be felt, that its sounds are inaudible almost, certainly undistinguishable, and the pulse almost imperceptible, under digitalis it becomes so altered that its apex-beat becomes perceptible; not only can the natural sounds, but, where present, the abnor-

mal sounds can be clearly distinguished, whose presence before could only be suspected, and the pulse can be distinctly counted.

To illustrate its action, let me bring forward one or two cases. An old and easy gentleman—with feeble irregularly-beating heart, with mitral regurgitation, who can scarcely walk round his garden, and is frequently brought in almost pulseless from cardiac syncope, requiring strong stimulants to keep the heart beating at all—in a few weeks after the administration of digitalis can walk two or three miles without discomfort; which state continues, and he has not had an attack of cardiac syncope for months—in fact since the treatment commenced. The dropsical patient—swollen, distended, breathing with the greatest difficulty, and often gasping in agony, his passively congested kidneys secreting only a few ounces of urine daily—under digitalis often leaves his bed relieved, his breathing easier, the œdema diminishing, and his kidneys, which before were unable to relieve the system, however goaded by diuretics, now secreting freely. And this not by its lowering the circulation, and thus relieving the renal congestion, as the old explanation ran, for in fact the heart beats more vigorously, the pulse is firmer; but because the blood now circulates more rapidly, is more readily brought in contact with the different depurating organs, and thus its watery portion more quickly excreted. Water is being constantly generated within the body, as one product of hydro-carbonaceous oxidation, and in the removal of it the kidneys have a great share; but unless the different portions of the blood are properly and quickly enough brought in contact with the depurating organs, elimination cannot be efficiently carried on. "It seldom succeeds in men of great natural strength, of tense fibre, of warm skin, of florid complexion, or in those of a tight and cordy pulse. On the contrary, if the pulse be feeble or intermitting, the countenance pale, the lips livid, the skin cold, the swollen belly soft and fluctuating, or the anasarcous limbs readily pitting under the pressure of the finger, we may expect the diuretic effects to follow in a kindly manner." —(Withering, quoted by Pereira.)

Another case particularly strikes me. A young woman of thirty, suffering from palpitation on the least exertion, was very weak, her pulse merely a tremulous motion,—for no distinct pulse could be ascertained,—the sounds of the heart were undistinguishable, and the impulse imperceptible, to this was added decided azoturia. Tonics of various kinds and variously combined, vegetable, mineral, with and without cod-liver oil, seemed to have no effect at all. At last, beginning to suspect that the state of the heart might be the cause and not the result, digitalis was administered; soon the pulse could be distinctly counted,

but fast and irregular; the heart's sounds could be made out, and the condition of a simply dilated heart was clearly revealed. Synchronous with the improvement in the centre of the circulation was a decided improvement in the other symptoms; the debility was no longer so extreme; moderate exertion no longer brought on violent attacks of palpitation; the nutrition of the body was improved, and the patient went steadily forward. She had suffered a great deal of mental anxiety and "hope deferred," which had probably altered the innervation of the heart.—*Edinburgh Medical Journal, April* 1869, *p.* 876.

DISEASES OF THE ORGANS OF RESPIRATION.

31.—ON THE MECHANISM OF THE CREPITANT AND THE SUBCREPITANT RALE.

By Dr. Austin Flint, Professor of the Principles and Practice of Medicine in the Bellevue Hospital Medical College, New York.

[Laennec attributed the moist crepitant râle to the bubbling of liquid in the air-cells, the bubbles seeming to be extremely small. Dr. Flint in this paper shows that it is really owing to the sudden separation of the coherent surface of the air-vesicles. This he does by producing the râle artificially by means of a new commodity called the "patent india-rubber sponge." In 1842 Dr. Edson Carr communicated a paper to the American Journal of Medical Sciences, showing that in the first stage of pneumonia the air-vesicles contain a certain quantity of thick and tenacious matter.]

In the first edition of a work on physical exploration, written by the author of this paper, and published in 1856, Dr. Carr's explanation of the crepitant râle is adopted in the following terms: "The most rational theory, and the one which meets best the objections to that of Laennec, was offered several years ago by Dr. Carr, of Canandaigua, N. Y. Dr. Carr attributes the production of the sound to the abrupt separation of the walls of the cells which had become adherent by means of the viscid exudation incident to the early stage of inflammation. . . . A viscid exudation within the cells and bronchioles belongs among the local phenomena of the disease (pneumonia); and as it is not readily removed by expectoration, but accumulates until the cells are filled, and the lungs solidified, the constancy of the râle for a certain time is intelligible. Its occurrence with inspiration only is fully explained by this theory. The conditions for the production of the sound are only present

after the lungs have collapsed with expiration, when the agglutinated walls of vesicles and bronchioles are separated with the expansion of the lung by the inspiratory act. Adopting Dr. Carr's explanation, it would be expected, as observation shows it to be true, that the sound would be present in the early stage of pneumonitis, the air in this stage still entering the vesicles, and subsequently cease, nearly or entirely, in proportion to the extent of the completeness of the subsequent solidification. The fact that, when solidification has taken place, a certain number of cells are not filled with the morbid exudation, and remain in the condition which characterizes all the cells in the early stage, explains the persistence of the râle in some cases during the second stage of pneumonitis, and its being developed, under some circumstances, by forced inspiration and especially at the end of the inspiratory act. The theory of Dr. Carr is also equally applicable to cases of œdema and hæmoptysis, in which the crepitant râle is observed. In these affections the vesicles contain a liquid which is glutinous, although in a less degree than in pneumonitis; and we can readily understand that the necessary physical conditions are present sometimes, but not constantly, on account of the greater facility with which the liquid escapes from the cells into the bronchial tubes, thus giving rise to the bubbling râles—the subcrepitant and mucous."

It would be affectation not to admit that I derive a certain degree of personal gratification in the demonstration of the correctness of Dr. Carr's explanation, from the fact that no other work on auscultation, within my knowledge, has adopted this explanation. Of prominent contemporaries I may name Barth and Roger, Fuller, Gerhard, Bowditch, Hughes, Blakiston, Latham, Gairdner, and Skoda (London edition, 1853), as adhering to the bubbling theory. Gerhard, in his treatise on the chest, edition of 1846, attributes the râle in part to bubbles, and in part to "the dilatation of the thickened and stiffened vesicles." My friend Dr. Loomis, of this city, in his recent publication, entitled "Lessons on Physical Diagnosis," after stating that there are two views as to the mechanism, viz, one attributing it to bubbling, and the other to the separation of the walls of the air-cells glued together by a viscid secretion, expresses the opinion that "it may probably be produced in both these ways." He introduces, however, a diagram from the work on diagnosis, by Da Costa, in which bubbles are figured within the air-cells. In the late work on Internal Pathology and Therapeutics, by Niemeyer, I find the following sentence: "Perhaps it (the crepitant râle) originates in the following manner: the alveolar walls are glued together by a viscid exudation during expiration, while they are forcibly separated by the entrance of air during inspiration."

The opinions which have been noticed relate to the mechanism of the crepitant râle. As regards the subcrepitant râle there have not been differences of opinion. That this is a bubbling râle no one can doubt. The character of the sounds, their occurrence in both inspiration and expiration, the inequality of the sounds which enter into the râle, and the comparative slowness of their evolution, constitute adequate evidence of bubbles.

For my knowledge of the artificial production of the crepitant râle in the way I am about to describe, I am indebted to my friend and associate, Dr. Henry F. Walker. Dr. Walker happened to purchase an articled labelled "Patient India-rubber Sponge," which is designed to take the place of the ordinary sponge for the toilet. This article consists of a block of india-rubber which has been made to assume a cellular arrangement, evidently by the introduction of air or gas while the substance is in a liquid state and during its congelation. On examining the article, it will be seen to be made up of cells of unequal size, the appearance being very like that of a portion of emphysematous lung. The elasticity of the india-rubber causes the article to expand after it has been compressed, the well-known cohesiveness of this substance offering a certain amount of resistance to the expansion. Now, after having examined the structure, if each one present will compress with the finger the article which I shall ask you presently to pass around, holding it close to the ear, and then allow it to expand, it will be at once perceived that a crepitant râle is beautifully represented. The fineness and the dryness of this râle are perfectly exemplified. It will be observed that the compression of the article causes no sound. This act of compression is to be considered as taking the place of expiration. The expansion is analogous to the movement of the lung in inspiration. The compression brings the walls of the cells into contact, and, from the adhesiveness of the substance, they cohere with a certain amount of force. There being no liquid present, the râle must be produced by the separation of the cell-walls by the elasticity of the substance. The intensity of the crepitation will be found to be proportionate to the force of the compression, the cell-walls being brought more completely into contact and the cohesion being greater according to the amount of compressing force.

Purchasing the article for another purpose, Dr. Walker was led to notice this unexpected application, and being associated with me in giving practical lessons in auscultation, he called my attention to its usefulness, as affording an exact representation of the crepitant râle preparatory to the demonstration of this sign in cases of pneumonia. It is indeed highly useful for this purpose. But, in addition, it serves to demonstrate that the

crepitant râle in cases of disease is produced, not by bubbling, but by the separation of the coherent walls of the cells and bronchioles. The representation of this sign is so complete by means of this article, that I do not see how any one can doubt that the mechanism is the same. I assume, therefore, that the explanation of the crepitant râle, published more than twenty-five years ago, by our countryman Carr, is proved to be the true explanation; and I claim in behalf of his memory the credit of the explanation which, by the author of the article on Auscultation, in the new French Dictionary of Medicine and Surgery, is accorded to others. As a friend of the late Dr. Carr, I cannot but have a feeling of regret that he did not live to see the correctness of his explanation established. As it is, justice to his memory, in respect of the originality and priority of the explanation, will be gratifying to numerous friends who held him in high esteem for his professional attainments and private worth.

The production of the crepitant râle, in the manner now illustrated, demonstrates the error of attributing the fineness of the râle to the small size of the cells. The fineness is not less marked when produced by the india-rubber sponge than when it emanates from the pulmonary vesicles and bronchioles. Dr. Carr's mode of illustration, by pressing together and separating the finger and thumb moistened with thick paste or mucilage, also demonstrates this error.

In concluding my remarks on the crepitant râle, I will refer to an explanation of the peculiar quality of the inspiratory sound in the normal vesicular murmur, which, so far as I know, is original with me. Quoting from my work on physical exploration (2nd ed., p. 133), I say with reference to this point as follows: "May not the peculiar quality (called the *vesicular quality*) be owing to the separation of the walls of the cells, or bronchioles, which, to a greater or less extent, are in contact, and, owing to the moisture of the tissues, become slightly adherent during the partial collapse of the lung at the end of an expiration? We shall see hereafter that this is the most rational explanation of an important and highly distinctive physical sign of disease, namely, the crepitant râle. The fact that the air does not circulate freely in the air-cells and bronchioles with each inspiratory act, renders probable the explanation suggested by the foregoing inquiry. Other facts supporting this explanation are, the increase of this peculiar quality of sound in the inspiratory act which succeeds a forced expiration in the act of coughing; the diminution of the quality in cases of permanent dilatation of the air-cells, or emphysema, and the limitation of this quality to the inspiratory sound." In view of the demonstration of the mechanism of the crepitant râle, the

correctness of the explanation of the vesicular quality in normal respiration, which is offered in the foregoing quotation, seems to me extremely probable. We have the crepitant râle in pneumonia, because the air-vesicles and bronchioles are glued together at the end of expiration by a viscid morbid product. We have a slight approach to this râle in health, in the vesicular quality of the inspiratory sound, because the air-vesicles and bronchioles are very slightly coherent at the end of expiration. The peculiar quality of the inspiratory sound in the normal vesicular murmur, Laennec compared to a "slight crepitation," but in view of his theory of the crepitant râle he could not, of course, suppose that the mechanism of this slight crepitation and of the crepitant râle is the same.

A good imitation of the vesicular quality in the inspiration of health is obtained by wetting a fine ordinary sponge, squeezing it as dry as possible, then compressing it, and allowing it to expand close to the ear. The liquid may be so effectually squeezed out of an ordinary sponge that there is not enough left for bubbling; but the moisture occasions a very slight cohesion of the cells when pressure is made, and the expansion gives such an approach to crepitation as constitutes the vesicular quality in the normal vesicular murmur. This mode of representing the vesicular quality goes to prove its mechanism.

Concerning the mechanism of the subcrepitant râle, as already stated, there is no difference of opinion. This râle is produced by the bubbling of liquid; it is therefore essentially different from the crepitant râle. The article which, as has just been seen, represents crepitation, may be used to exemplify the subcrepitant râle, and to illustrate certain points relating to the differentiation of the two râles. The application of the "india-rubber sponge" to show the mechanism of the subcrepitant râle was suggested by Dr. William J. Chandler, one of the house physicians at Bellevue hospital. If a portion of the "sponge" be compressed and allowed to expand under water, the cells are filled with liquid; and now, holding it close to the ear and alternately pressing it and relaxing the pressure, fine bubbling sounds are produced. That bubbling is caused by the pressure, is shown when the portion of "sponge," of the cells filled with liquid, is compressed under water; small bubbles, of unequal size, in great abundance, rise to the surface. This artificial subcrepitant râle is produced alike by the pressure of the "sponge," and by the expansion after the pressure; thus, the fact of the occurrence of this râle, as a morbid sign, in both inspiration and expiration is illustrated.

The bubbling, as thus produced, is very fine, and the resemblance of the subcrepitant to the crepitant râle is admirably

shown by producing alternately, with two portions of "sponge," one portion dry and the other filled with liquid, the representations of the two râles. This may be practised with advantage in order to exercise the ear in discriminating the differential characters of these two râles.—*New York Medical Journal, Feb.* 1869, *p.* 449.

32.—ON THE USE OF ETHER AND ETHERISED COD-LIVER OIL IN THE TREATMENT OF PHTHISIS.

By Dr. Balthazer W. Foster, Physician to the General Hospital, Birmingham.

[It is only of late years that the disorders of digestion associated with pulmonary tubercle, have attracted special attention. The difficulty of assimilating fat is the one characteristic of the dyspepsia of phthisis, occurring in 75 per cent. of consumptive cases.]

The greatest step made for many years in the treatment of consumptive patients was the introduction of cod-liver oil; and Dr. Hughes Bennett, to whom we owe this great boon, expressly states "that the great obstacles the practitioner has to contend with are the dyspeptic symptoms." In cod-liver oil was found a form of fat which could, in many cases, be digested even by the impaired organs of consumptives; but the next step, viz., the search after some means of augmenting the secretions which are specially devoted to the digestion of fatty matters, has been hitherto neglected or unsuccessful. To pour oil into a patient's stomach, without at the same time taking measures to ensure its digestion, has always appeared to me a crude kind of therapeutics. Its simplicity has, it would seem, recommended it to the routinist; for there is probably no single remedy used in any disease with so little preliminary inquiry into the conditions favourable to its action. Experimental physiology has taught us that the only fluids in the body which have the power of acting upon fat, so as to render it fit for absorption, are the secretions of the pancreas and the duodenal glands. To these secretions therefore, we must look for assistance in the treatment of phthisical patients by cod-liver oil, for on the action of these glands must the assimilation of the remedy depend. And such healthy action can scarcely be supposed to co-exist with the inability to digest fat, which is so frequent in the disease under notice. As Bernard has shewn, the chief of these glands (the pancreas) is most sensitive to nervous influences, ceasing to form a healthy secretion from very slight irritation, and even from emotional influences. This fact, taken together with our knowledge of the peculiar character of the dyspepsia of phthisis, jus-

tifies the assumption that the pancreatic secretion is disturbed. Not long since, Dr. Dobell, holding these views, made some experiments with pancreatic emulsions of fat and pancreatine, which supported this interpretation of the phenomena, and shewed that fat when emulsified is more readily digested than in any other form. In this paper I have, however, to propose a mode of treatment which should, I think, in all cases precede the use of such remedies as pancreatic emulsion, because it aims at remedying the disorder, not by artificially complementing the defective secretion, but by stimulating the glands to renew their healthy action. Instead of throwing into the system a substance which may be yet formed in physiological quantities, it endeavours to promote the normal flow of pancreatic juice.

The drug which gives us this power is *Ether*, and I now propose to lay before the meeting the evidence of its physiological action, and afterwards to speak of its therapeutical effects. I had long sought, and sought in vain, for some means of acting on the pancreas in the treatment of phthisis, till one day, two or three years ago, when reading Claude Bernard's elaborate investigations on the properties of pancreatic juice, I found the long looked for clue; stated, indeed, so simply, and brought out in successive observations and experiments so clearly, that it has ever since been a matter of surprise to me that no previous reader should have seen the importance of the facts to practical medicine. In the following extracts, I lay before you the evidence of our greatest living physiologist on the mode of stimulating the secretions of the pancreas. The first passage which arrested my attention was the following, which occurs in Bernard's Lecons de Physiologie Experimentale appliquée à la Médecine, tome ii, p. 226. "The nervous influences which directly excite the secretion of the pancreas are much more difficult to determine than those which act on the salivary glands. In a dog, with a tube fixed in the pancreatic duct, I have galvanised the solar ganglion of the great sympathetic without a result, clearly shewing any modification of this secretion. *But I have seen ether introduced into the stomach determine soon afterwards a considerable flow of pancreatic juice.*" This statement was so clear and unmistakable, that I at once proceeded to search in Bernard's other works for its confirmation. From his Lecons sur les Effets des Substances Toxiques et Médicamentenses. Lecon 29, p. 426, I extract the following: "I would remind you only of the influence of ether on the intestinal secretions. Ether is reduced to a vapour when introduced into the stomach, and may rupture it. When, however, this accident does not occur, then may be noticed a vascular congestion of all the digestive tracts, but this congestion never attains to inflammation. At the same time, the secretions are rendered active and the rapidity of ab-

sorption is notably augmented. These last effects suffice to establish the non-inflammatory character of the congestion of the mucous membrane, for it is known that on an inflamed surface the secretions are dried up and absorption becomes more difficult.....The turgescence of the mucous membrane of the intestine, as well as the liquids secreted, present the same characters when produced by ether as when they are caused by their normal excitant—food. In comparing the pancreas of an animal, opened fasting, with that of an animal opened during the process of digestion, a great difference of colour, due to the difference of vascularity, is observed. After the administration of ether the pancreas becomes red and turgescent, as it is during digestion, and its secretory function is proportionally increased by the afflux of blood. I have accordingly been able to avail myself of this procedure to obtain pancreatic juice. Normally, this fluid discharges by drops more or less infrequent, but when a little ether is given to an animal having a pancreatic fistula, this discharge is seen to become more abundant, without the secreted liquid having lost any of its physico-chemical characters." Demonstrating these facts to his class, the Professor continues: "Here is a rabbit, upon which we will show you the increased secretion under the influence of ether. The pancreatic duct is laid bare, and into it there is introduced a small silver tube. The intestines of the animal are red and very vascular, and contain ether in vapour. The tube introduced into the pancreatic duct plainly gives passage to a very active flow of pancreatic juice, while under ordinary conditions the liquid only flows out drop by drop with an activity much less." In another place (p. 422) summing up the results of his experiments, and alluding first to the effects of ether in promoting absorption of fatty matters, he says:—"Finally, in our experiments, the injection of the lacteals is due to the abundance of the pancreatic secretion, and to the extremely fine state of division of the fatty matters which occurs in the intestine. It is due, also, to *the absorbing power having been augmented by the ether.* This activity of absorption has been observed in the case of several poisons. We have already mentioned that the combination of ether with poisonous doses of strychnia and nicotine produced death more rapidly in the animals on which we experimented. The action of ether introduced into the digestive organs is, therefore:—1. To stimulate all the intestinal surface. 2. To stimulate the secretions which are poured into the intestine. 3. To modify and decidedly increase the absorbing power." In a short passage (page 428), at the end of the experiments referred to above, the following passage occurs:—"Ether increases the absorption of fatty matter, which it places at once in a state of fine division, and in contact with a more abundant secretion of

pancreatic juice. In this way it produces a very marked white injection of the lacteals."

If necessary, I might multiply these extracts still more, but enough has, I think, already been quoted from the works of our first experimental physiologist to teach us the physiological action of ether. This action is twofold: (1) it stimulates the pancreas and glands of duodenum to pour out their secretions freely, and (2), at the same time, it facilitates the absorption of those very substances which these secretions are designed to digest. In other words, ether not only obtains for us the secretions required to digest fats, but promotes the absorption of these fats when digested. Can any physiological action be more clear, or any experimental proof be more satisfactory for the end we have in view?

I now come to the second part of my task; namely, the therapeutical application of the foregoing facts. Having found as I considered, sufficient evidence of the special action of ether on the pancreas, I determined to test the value of the discovery by administering ether in all cases characterised by inability to digest fat. In the out-patient departments of our hospitals, many such cases occur, which are generally classed as dyspepsia. Many cases of neuralgia are also to be met with in which a most decided improvement follows the increased power of absorbing fatty food. To both classes of patients I gave ether sometimes in combination with cod-liver oil, sometimes alone before meals. The results were most satisfactory; the oil was digested more easily and the nutrition of the patients greatly improved. Of these cases I shall speak more fully on a future occasion. I next ordered ether in mixture to all my phthisical patients at the General Dispensary, selecting the Dispensary for my investigations, rather than the Queen's Hospital, because all the patients were out-patients, and consequently exposed to no new and favourable conditions while the experiment was being tried. The patients being also of a somewhat better class than those attending the hospital, were not, as is so often the case in our large towns, struggling to combat a mortal disease while suffering from the effects of disease's chief ally—improper and insufficient food. For some months I pursued the treatment, seeing a very large number of consumptive cases, to all of whom ether either alone or in conjunction with cod-liver oil was administered; and the good effects were so decided, that I determined to investigate the subject more methodically, and to keep a careful record of each case. The good results observed in this preliminary inquiry were a return of the power of taking oil and fatty food, which had been previously distasteful or had even excited sickness; increased appetite, improved general nutrition and increase of weight, diminution of cough and expectoration, and

cessation of night sweats. The general impression produced on my mind was so favourable, that I began my more exact inquiries with much confidence. In my first cases, the ether had been given in water with hydrocyanic acid and bicarbonate of potash, twenty-minim doses of ether to each ounce of the mixture. The ether was afterwards added to cod-liver oil, the æther purus of the Pharmacopœia being used, and about ten minims (0.259 m.) added to every two drachms of oil at first, afterwards fifteen and twenty minims were occasionally given in the same quantity of oil. In some cases the ether was administered in water alone, and taken a short time before the oil. The effects were similar in all cases; but for convenience sake, and on account of its power of masking the unpleasant properties of the oil, I now, generally, give ether mixed with cod-liver oil, in the proportions mentioned. In my second and systematic inquiry, I treated fifty cases taken as they presented themselves at the dispensary, each patient being carefully examined on admission and at least once every fifteen days during treatment. A brief record was kept of the progress of each case; but from former experience, I determined in this inquiry not to accept the statement of the patients themselves as evidence of improvement, but only to consider those patients better in whom the result of a physical exploration of the chest, in addition to *decided increase* in weight, confirmed the statements made. I therefore weighed every patient once a week. As it would be impossible to give a record of each case in a communication such as the present, I must confine myself to a brief statement of the results obtained in the fifty cases.

Sixteen were admitted in the first stage of the disease; nineteen in the second stage; and fifteen in the third.

Of the sixteen in the first stage (or stage of deposition) seven improved in general symptoms and in physical signs, gaining on an average over $7\frac{1}{2}$ lbs. each; five remained stationary, all gaining weight slightly; and only four became worse.

Of the nineteen cases in the second stage, six improved in all respects, gaining on an average about 8 lbs. each, two cases gaining $14\frac{1}{2}$ lbs. and 10 lbs. respectively; six remained stationary; and seven became worse.

Of the fifteen cases in the third stage, seven improved, gaining on an average, about 5 lbs. each; five remained stationary; and three became worse.

Of the total fifty cases, twenty improved, sixteen remained stationary, and fourteen became worse.

Six of the cases treated, in no instance for a less time than three months, and observed over a period of many months, retained their weight; were troubled by no symptoms, and maintained the improvement in their physical signs. Only one

of these were observed over a less period than fifteen months, three over two years, and two over eighteen months. These cases may be considered, I think, as examples of the arrest of the disease, for the patients have returned to their ordinary avocations, and are able to earn their livelihood untroubled by their former disease. The only other remedies used in those cases were croton ointment, as a counter irritant, Dover's powder occasionally to relief the cough, and, in a few cases, a little linctus morphiæ. But as cod-liver oil was administered as well as ether, the objection may very naturally be made that the improvement was due to the use of the oil. For my own part this objection has not much value, for I had long used oil largely without obtaining any results at all equal to those stated. In order, however, to meet this objection the ether was stopped in ten instances, and the oil continued; six times there was a fall in weight during the following three weeks. In one case the patient, who had taken ether for some two months, continued to gain weight. In the three other cases the gain ceased, but was again observed in these patients, as it was in all, when ether was again administered.

These results are not only instructive, as showing the effect of ether in increasing weight, but also as showing that the digestion of fatty food is restored to its normal state, in many cases, after a long course of ether. In the cases which have done best under treatment, that is, the cases which I think we may consider instances of arrested phthisis, the power of taking fats, which was at one time much impaired, has returned, and the gain in weight has been maintained over a period of many months. I may here also add that, in all the fifty cases there had been marked wasting before my treatment was adopted, in at least half the cases, cod-liver oil notwithstanding. Many of my patients have over and over again expressed their preference for the etherised oil; and many who have been unable to retain ordinary oil when taken, have been able to use etherised oil, not only without disagreeable symptoms, but almost with pleasure; "to drink it from the bottle," as some have expressed it.—*British Medical Journal, Nov.* 21 *and* 28, 1868, *pp.* 543, 570.

33.—RAWNESS OF THE TONGUE AND PAINFUL DEGLUTITION IN ADVANCED PHTHISIS.

By Dr. Douglas Powell, Physician to the Hospital for Consumption, Brompton.

[The following is a note of the treatment which Dr. Powell employs with success in the above distressing complication.]

The combination of remedies most beneficial in these cases, which must be familiar to all and require no illustration, con-

sists of chlorate of potash and glycerine in some syrup containing morphia. The proportions Dr. Powell commonly uses are —chlorate of potash, forty to sixty grains; glycerine, half an ounce; syrup to four ounces, with morphia, one grain and a half to two grains. A teaspoonful swallowed slowly acts locally on the parts affected, relieving at the same time the cough. Of course, in the latest stage of the disease this will but render the remaining hours of life more comfortable, or prolong life a little; but there are some cases where the disease of the lungs is considerable, though not incompatible with life, and the patient having been reduced very low by diarrhœa, vomiting, &c this condition of tongue and throat will come on, and, rendering the taking of nutrients or stimulants almost impossible, the patient therefore dies from exhaustion. Indeed, the aphthous condition which follows this is usually considered a fatal sign in chronic disease; but it is not necessarily so. In these cases the above remedy relieves pain, cleanses the tongue, and enables the patient to take nourishment and remedies which greatly prolong life.—*Lancet*, *Dec.* 19, 1868, *p.* 799.

34.—ON THE TREATMENT OF ASTHMA BY BELLADONNA.

By Dr. Hyde Salter, F.R.S., Senior Physician to Charing Cross Hospital.

[Dr. Salter in the introductory part of this paper states that he has during the last two years used belladonna extensively in the treatment of asthma, and with very satisfactory results.]

If I were to express what appears to me to be the peculiar excellence of belladonna as a sedative in asthma, I should say it consisted in its power of diminishing reflex irritability—a power which it appears to me to possess in a degree greater, in proportion to its other sedative effects, than any other sedative.

My method of giving it will be best seen in the following cases. I do not know that the tincture has any advantage over other preparations, only it happens to be that which I have tried. I should think that the liquor atropiæ might, from its uniformity of strength, be even preferable.

Case 1.—R. G., a lady aged 25, who has been liable to hay fever for eleven years, and to asthma for seven, came to me on May 18th, 1868, for the cure of her hay asthma. She had been suffering for nearly a month, and had not had a single night's rest. She was not troubled with her asthma by day, but only with her hay-fever symptoms. As soon, however, as she went to bed on came her asthma, and lasted regularly all night. She was worn out for want of rest, and felt fagged and miserable. I ordered her ten minims of the tincture of belladonna three

times a day, telling her to increase the quantity, day by day, till the characteristic effects of the drug were produced. She gradually raised the dose from the ten minims to twenty. She felt better the first night after taking it. She took it for nine days, and had no asthma whatever. She then, thinking herself cured, and feeling her head very uncomfortable, omitted it for one day, and the following night got no sleep from asthma. She then resumed it, and has had no asthma since. She now regularly takes twenty drops three times a day. Her head is slightly affected, and her eyes decidedly so—misty, and she cannot read; but there is not a trace of asthma. She has never found anything else prevent the attacks. The belladonna seems to have no influence whatever over the other hay-fever symptoms; the sneezing, running at the eyes, &c., go on as before.

Case 2.—Sarah P., aged 46, has had asthma ever since she was nineteen years of age—that is, for twenty-seven years. For the last five months she has been worse than ever, and for some time past has had asthma regularly every night. It begins between two and three o'clock, and after that she gets no rest. I ordered her to take the tincture of belladonna every night on going to bed—to begin at ten minims, and gradually to increase the dose till her head and sight became affected. She came to me on the 29th of last July. On the 14th of August I find the following entry in my note-book :—"This patient came to me a fortnight ago yesterday. She has almost completely lost her symptoms ever since, having had uninterrupted good nights. She has gradually reached thirty drops of the tincture of belladonna, and now takes it every night. She looks wonderfully better, and is able to take long walks." From that time I have not heard anything of her.

Case 3.—Col. R., aged 40, has had asthma for sixteen years. For the last few years it has been gradually getting worse, and now he has it almost every night, commencing at from one to two o'clock a.m. He has tried various things without any success—Indian hemp, chlorodyne, ether, the inhalation of chloroform, dry cupping, coffee, iodide of potassium, abstinence, &c. I saw him on September 16th, and ordered him to try the belladonna at night in the usual way. On the 23rd I find the following note :—"He has gradually got the belladonna up to forty minims without any appreciable inconvenience. The nights have been very good. The two last mornings there has been no oppression whatever, nor any sitting up in bed; he has slept right through the night. He walked this morning, directly after breakfast, from his house at Blackheath to the station—a mile—in sixteen minutes, and

the same pace up from Charing-cross station here." I have not seen him since.

Case 4.—Wm. P., aged 38, has been asthmatic seventeen years. His attacks come on every morning on rising from bed, but often trouble him throughout the day as well. There is defective respiration at the right base, violent paroxysmal cough, and a good deal of expectoration. This patient came to me on Oct. 13th. A week after I made the following note :— "Since coming to me this patient has taken the belladonna every night—twenty, twenty-five, and then thirty drops. to which last dose he has stuck. The result is that he is quite a different man. He has slept all through the night, dressed himself without any trouble or difficulty, and has walked half over London as quickly and well as ever he did in his life. When he arrived in town his breath was so bad that he had the greatest difficulty in getting from the Vauxhall station to the church near the bridge. He spits hardly anything. There is now a complete absence of all musical wheezing, and of any adventitious sound whatever : respiratory murmur quite re-established at right base, and indeed perfectly natural everywhere. And this change has taken place in one week."

I believe one reason why belladonna has not had a greater reputation as a remedy for asthma is that it has not been given in large enough doses. I think that, like lobelia, it must be given in doses sufficiently large to produce its physiological effects, otherwise we have no right to say that it has been fairly tried, or to conclude that it has been a failure if it has not achieved a cure. I think to give ten minims three times a day in some mixture is simply worthless. I have seen now numberless cases in which both belladonna and lobelia have been consigned to the limbo of failures, when a fresh trial of them, on the plan of gradually increasing the doses till an ultimatum has been reached, has proved them to be perfectly successful remedies. Sometimes, but very rarely, belladonna will relieve asthma when given short of a physiological dose ; sometimes, but still rarely, it fails to give any relief even when pushed to its full physiological effects ; the common thing is for it to fail till so pushed, and then to succeed. When I find belladonna has only been taken in the ordinary small doses, without any increment, I always regard it as not having been tried at all.

The advantages of administering it in the way I have described are :—

1. That, giving it at night, you bring the full force of the drug to bear upon the disease at the time at which it is most liable to come on, and thus, if you are successful, tide your patient over the critical time.

2. By gradually feeling your way up to the required dose, you are able ultimately to reach without fear a dose which you would be unwilling to prescribe without such a tentative approach.

3. In those cases in which the therapeutical dose is reached before the physiological—that is, in which the asthma yields before the sight or head is appreciably affected,—it enables you to stop short as soon as relief is obtained, and thus spare your patient any of the disagreeable effects of the drug.

4. By giving it only once in the twenty-four hours, you are able to give a larger dose than you would be able to do if oftener repeated.

5. By confining the dose to bedtime, the patient's days are, in spite of a large dose, passed in comfort; for, as the morning advances, the dulness of head, confusion of sight, and drought of mouth pass away.

6. You are thus enabled to find out what is the dose for the individual—a very important point. People differ very much in their tolerance of belladonna. Some of my patients have been unable to take more thsn twenty minims once in the twenty-four hours without very unpleasant symptoms; while I have known others able to take a drachm three times in the same interval without any inconvenience. And as they differ in their tolerance of the drug, so do they differ in the dose at which their asthma will yield. The only way to ascertain what that dose is, is to make each case a separate experiment, and this can only be done in the way I describe.

7. By giving the remedy three or four hours before the attack is likely to come on, the treatment becomes *prophylactic*. If by taking a dose every night for thirty nights the attacks have been for that time prevented, the patient has ceased to be an asthmatic for a month. This is a very different thing from having had thirty attacks in the same time which have been cut short by the remedy. In all "habitual" diseases, in which the recurrence keeps up the tendency, prophylactic treatment has, in relation to final cure, a pre-eminence it does not possess in diseases in which habit has no place. For such diseases it is *the* treatment. It does more than spare your patient an attack of his malady; it breaks, *pro tanto*, that chain of sequences which is the very life of the morbid tendency.—*Lancet, Jan.* 30, 1869, *p.* 152.

35.—BROMIDE OF POTASSIUM IN SPASMODIC ASTHMA OF CHILDREN.

Herr Sondahl reports a very interesting case in which he tried this remedy, on account of the recommendation of it by

Dr. Warburton Begbie (Edinburgh Medical Journal, 1866). The patient was a child of fourteen months, of very fatty development. He was first attacked with spasms of dyspnœa early in 1866. By dieting (modified Bantingism) and the use of emetics, expectorants, and Carlsbad water, he improved for a time, but towards the end of September he relapsed. The distress became extreme; hardly any sleep was obtained; the urine was nearly suppressed; general œdema at last set in, and all the symptoms were excessively bad. All manner of narcotics, expectorants, and anti-spasmodics having been vainly tried, Sondahl resorted to the bromide. It was given in six-grain doses, in syrup, every two hours. A most remarkable improvement was rapidly produced; the dyspnœa subsided, the lividity of the face and œdema disappeared, the secretion of urine returned, and sleep was obtained without difficulty. In seven days from the commencement of the bromide treatment, the little patient was substantially convalescent. Sondahl has also obtained excellent results with the bromide in a case of asthma in a boy of fourteen. In two old asthmatic patients, on the contrary, no good effects were obtained; neither the spasmodic symptoms nor the cough were relieved.—*Practitioner*, *Feb.*, 1869, *p.* 121.

DISEASES OF THE URINARY ORGANS.

36.—ON EXCESS OF UREA IN THE URINE IN CERTAIN FORMS OF DYSPEPSIA AND NERVOUSNESS.

By Dr. Henry William Fuller, Physician to St. George's Hospital.

In the year 1846 I had occasion to examine the urine of a patient who was suffering from symptoms of a nervous and dyspeptic character. The urine was frothy, somewhat pale and clear, sp. gr. 1025; it had an acid reaction and a strong urinous smell; it contained neither sugar nor albumen, and only a few small crystals of oxalate of lime were visible under the microscope, but the addition of nitric acid caused intense effervescence, and about twenty minutes after this had subsided crystals of nitrate of urea began to form and ultimately filled the interior of the test-tube. During a period of rather more than three weeks I examined this patient's urine every second day, and invariably found it to contain urea in quantity sufficient to crystallize readily on the addition of nitric acid, without any previous evaporation or concentration of the urine. The degree of crystallization varied at each examination, in consequence, doubtless, of a variation in the amount of the urea contained

in a given bulk of the urine; but inasmuch as I could not persuade the patient to save and measure the quantity of urine voided in twenty-four hours, I am unable to state whether less urea was secreted when the crystallization was at its minimum, or whether the variation arose from an increase in the quantity of water and a consequent dilution of the urea. The patient, however, declared, as the result of his observations, that he was passing about two pints of urine, and that the quantity scarcely varied from day to day.

The patient was thirty-seven years of age, of spare habit, in good condition, and apparently healthy; he was not a large eater, but he relished his food, and ate meat three times a day. His principal complaint was of nervousness and depression of spirits, indisposition for exertion, whether mental or bodily, and dyspepsia, with irregularity of the bowels, acidity of stomach, and excessive flatus.

The case made a strong impression on me at the time, for the reason that I was not prepared for the discovery of so much urea, and had never heard such cases spoken of by my professional friends or seen any notice of them by authors. I have therefore kept the matter steadily in view, and within the last two years have examined the urine of every patient in whom, judging from the character of the symptoms, I have thought it likely that urea might exist in excess. The result has been that I have detected urea in excess in twenty-seven cases, and so well marked and peculiar are the symptoms by which that condition of the urine is accompanied, that now, if the features of the patient's malady induce me to suspect its existence and to examine the urine with a view to its discovery, I am seldom disappointed in obtaining the characteristic crystals of nitrate of urea.

The cases under discussion resemble each other so closely in many of their more prominent symptoms, that it will suffice to give the details of one or two which may be fairly taken as samples of the whole.

A. T., aged 43, a spare but healthy looking man, 5 feet 8 inches in height, 10 stone 9 lbs. in weight, of florid complexion, but somewhat bilious temperament, reported that he had been nervous throughout his life, and since the age of thirty had not felt well for any lengthened period. If he had unusual worry in his profession or any anxiety in his family, or even if he was unable to obtain his ordinary amount of outdoor exercise, he was apt to become irritable, low, and depressed, indisposed for exertion, and easily fatigued, unable to fix his mind on any subject requiring continuous application, and afraid to encounter the rubs and vexations incident to his daily life. His present illness he attributed to anxiety arising from the illness of one of

his children, together with the want of his usual exercise. He had been remarkably well for some time previously, and became conscious of some change or disturbance in his system within a week after the commencement of his trouble. At first he became restless at night; then drowsy after meals, especially after dinner, and began to suffer from flatulence and acidity; shortly he found himself nervous and dejected without obvious cause, especially in the morning, unable to apply himself to his professional duties, and unwilling, if not unequal, to take his wonted exercise. Nervous fancies and wretched feelings, occasional giddiness, fugitive pains in various parts of the body, and a sense of extreme languor and weariness, rendered his life miserable. For six weeks before he consulted me he had been taking a series of Turkish baths, and had dieted himself carefully, but notwithstanding his care the dyspeptic symptoms had continued, and his mental disquietude was more constant than before.

When I first saw him he was restless at night, but obtained a fair amount of unrefreshing sleep; his skin was rather dry, but perspired readily after exercise; his pulse ranged from 84 to 96; his appetite was tolerable, but not so good as usual; he ate meat twice a day, and was in the habit of drinking four or five glasses of sherry or an equivalent amount of claret, but he never drank beer; after each meal he suffered greatly from flatulence and drowsiness, and after breakfast experienced a sense of uneasiness about the head and of heat and weariness of the eyes. His bowels were somewhat torpid, but usually acted without the aid of medicine; his urine he said was "all right," and with the exception that it was frothy or strongly beaded it certainly did not present an unhealthy appearance. Occasionally it threw down a deposit of the lithates, but more commonly it was clear, pale, acid, of a strong urinous odour, sp. gr. 1026, and was free from sugar and albumen. Under the microscope a few octohedral crystals of oxalate of lime and here and there a few epithelial cells were visible, but they were scarcely more numerous than in healthy urine. On the addition of nitric acid to the extent of about one-third of the bulk of the urine a strong effervescence took place, and within twenty minutes after this had subsided crystals of nitrate of urea had formed to such an extent that the whole of the urine in the test-tube appeared to be converted into a solid mass. On some occasions the crystals of nitrate of urea did not occupy above half the bulk of the urine, but commonly they filled two-thirds of the space occupied by the urine. My friend Dr. Dickinson, who kindly examined a sample taken from the entire quantity of the urine (1927 c.c.) voided in twenty-four hours, reported that the day's excretion contained 53·9 grammes of urea, or nearly 21 grammes in excess of the

average amount excreted within that period according to the observations of Dr. Parkes.

The next and only other case which I shall detail is of a very similar character. The patient, a gentleman closely engaged in the city, was 37 years of age, about 5 feet 7 inches in height, and 10 stones 2 lbs. in weight, of sallow complexion, but healthy aspect. He said he had enjoyed excellent health until the age of 29, when he had a severe attack of fever, which left him in shattered health and extremely nervous. Some months elapsed before he regained his strength and was able to resume business, and he had suffered ever since, on slight occasions, from disturbance of the digestive organs, as evidenced by flatulence after meals, palpitation, colicky pain in the abdomen, and a tendency to acidity and diarrhœa. Accompanying these symptoms there was a distressing sense of depression, a disinclination to exertion, and inability to apply himself steadily to work. He was always fearing some impending calamity, some serious and irremediable bodily affliction, or some loss or misadventure in business. His skin was cool and rather inactive; pulse 84. Tongue coated; bowels at one time costive, at another relaxed. The urine was frothy or firmly beaded, clear, acid, of pale sherry colour, sp. gr. 1028. It had a strong urinous smell, and was perfectly free from sugar and albumen. Nothing noteworthy was observed under the microscope; on the addition of nitric acid an intense effervescence ensued, and within half an hour crystals of nitrate of urea began to form and soon filled two thirds of that portion of the tube occupied by the urine. In this case, as in the last, Dr. Dickinson kindly determined the amount of urea excreted in twenty-four hours by examining a sample taken from the entire quantity of urine (1359 c.c.) which had been passed, and he found that it amounted to 55·1 grammes, or 22·1 grammes in excess of the average. In four other cases, in which, at my request, Dr. Dickinson determined the quantity excreted in twenty-four hours, it was found to amount to 42·5 grammes, 41·8 grammes, 39·06 grammes, and 51 grammes.

Now, all the instances which have come under my notice have had several features in common. With one exception, that of a lady, aged forty-three, the patients have all been males, varying in age from twenty-three to fifty-four. Most of them have been essentially meat eaters, partaking sparingly of bread and other varieties of farinaceous food, but five of them ate meat only twice daily, and one, a member of our own profession, declared, not only that he never touched meat except at dinner, but that even then the principal part of his meal consisted of vegetable and farinaceous food. Without exception, the patients have been tolerably healthy in appearance, and often somewhat florid, though in some instances they have lost flesh slightly; indeed,

their aspect has been so little indicative of disease, and their complaint of suffering has been so urgent, that any practitioner who did not examine the urine for urea would have surely regarded them as simply hypochondriacal. Usually the pulse has been quick and rather weak, and the patient's complaint has been of languor, flatulence, restlessness at night, and extreme nervousness. They have been afraid of encountering the rubs of everyday life, and in some instances have for the time lost their pleasure in society; they have eaten fairly, though with less than their usual relish, and the feeling of languor which has oppressed them, and of fatigue which has followed even a moderate amount of exertion, has led to their abstaining almost wholly from exercise. They have usually complained of extreme depression in the morning, with a sense of heat about the eyes, muzziness in the head, and weariness after breakfast —feelings which have in some measure passed off as the day has advanced, and they have partaken, as usual, of stimulants. The condition of the urine has varied; at one time it has been scanty, and loaded with lithates; at another abundant, or even excessive in quantity, of a light sherry colour and strong urinous odour; and these alterations have been repeatedly observed in the same case at intervals of a few days, or even of a few hours. The pale and clear urine, of a specific gravity varying from 1029 to 1032, and quantity from 32 oz. to 64 oz., is that which has usually contained the largest quantity of urea, and it has remained markedly frothy or beaded for twenty-four or thirty-six hours, just like diabetic or highly albuminous urine. Dr. Prout has stated that "urine containing a large proportion of urea is prone to decomposition, and generally soon becomes alkaline;" but in the cases under consideration the urine, even when exposed to the air, will remain acid and free from decomposition for two or three weeks in warm weather, and in cold weather will remain unchanged for as many months.

The method I have adopted in testing the urine has been to add to a small quantity of it in a test-tube about one-third of its bulk of nitric acid, and then to shake the tube until all effervescence has subsided. The tube is then left at rest, to allow of crystallization of nitrate of urea to take place. In cold weather this is commonly effected in twenty minutes or half an hour, and it will usually occur in about the same time even in hot weather if the test-tube is immersed in a bath of cold water.

It should, perhaps, be added that the tendency to a recurrence of this form of disease is very great, and several of the patients have consulted me in reference to the same train of symptoms on more than one occasion.

The treatment adopted has varied in its details, but that which has proved most successful is based upon the view which

I take of the pathology of the disease, namely, that it is connected primarily with perverted nervous action, in consequence of disturbed assimilation. Neurine tonics, such as arsenic, quinine, strychnia, iron and zinc, together with the mineral acids, the shower bath, and the dripping sheet, are the remedies which have proved most successful in my hands, and when combined with alterative doses of blue pill and colchicum will usually afford relief. In one or two instances, characterised by extreme irritability, the bromide of potassium, in conjunction with iron, has proved a more effective remedy, and occasionally the hypophosphite of soda has been serviceable.

The form of disease which I have thus endeavoured to bring before the Society has not as yet received distinct recognition, though the peculiarity of the symptoms by which it is signalised are such, I think, as entitle it to be regarded as a special form of derangement. Except in Dr. Prout's classical work on 'Stomach and Urinary Diseases,' I find no mention made of it in any treatise on the urine published in this country. Even Dr. Prout regards it as very rare, and, while suggesting its close connection with diabetes mellitus, declares (p. 96) that "where he has seen one case of an excess of urea in adults, he has seen twenty cases of diabetes." Dr. Parkes, referring to Dr. Prout's observations on these cases of azoturia, distinctly states, "I have never seen a disease of this kind." It is obvious, therefore, not only that this condition of the urine has, in many instances, escaped recognition, but that the form of derangement on which it depends requires careful investigation.

The symptoms by which it is characterised appear to me to necessitate a complete revision of the theory hitherto accepted respecting the cause of the presence of urea in the urine. Up to the present time it has been held that urea is formed principally, if not solely, during the destructive processes of assimilation as a result of oxidation of the tissues, and in confirmation of this opinion most authors have asserted that it is found in largest quantities after violent exercise and during the excitement of febrile disorders, when the waste of tissue is at its maximum. But I altogether doubt this statement, and certainly in the class of cases now brought before the Society this condition of affairs is reversed. The patients ordinarily remain in fair bodily condition, lose very little flesh, and bear the aspect of health; they are languid and lethargic while the attack is present, and take little exercise; their appetite is good, though their zest for food is impaired; and their principal complaint is of dyspepsia, prostration, and nervous derangement, so that they are often regarded as simply nervous and hypochondriacal. In short, it would appear that the azoturia must have some other source than the wear and tear of the tissues, and there are only two

probable explanations of its occurrence—the one that it is referable, in part at least, to the production of urea from the elements of the food during the primary processes of assimilation, as a consequence of perverted nervous action; the other that a larger quantity than usual of the nitrogenous elements are secreted by the kidneys in consequence of a defective secretion of nitrogenous matters by the bowel. The recent experiments recorded by Dr. Parkes would seem to show that this latter is at least a possible explanation, and unless, in any given case, the urine and the excreta from the bowels could both be examined, it cannot be affirmed positively that it does not afford a solution of the mystery. But it appears far more feasible to suppose that a certain portion of the food, instead of being utilised in the system, undergoes conversion into urea, and is then excreted without having fulfilled its mission in the animal economy. In the class of cases under consideration, the bowels are not more than ordinarily torpid, nor is there any evidence of defective intestinal secretion, whereas there are marked symptoms throughout of disturbed digestion and of perverted nervous action.

Several circumstances lead me to believe that this affection is more nearly allied to gout than it is to diabetes, as suggested by Dr. Prout. In the first place, not a trace of sugar was detected in the urine in any instance, though it was invariably sought for. Secondly, no less than eleven out of the twenty-seven patients were the offspring of gouty parents, and three of them had actually suffered from gout. Thirdly, the urine was often highly charged with lithates, and occasionally threw down crystals of uric acid, indicating a strong tendency to the lithic acid diathesis. Fourthly, in most instances the quantity of urea appeared to vary inversely as the quantity of uric acid. I speak hesitatingly on this point, because, unfortunately, the amount of uric acid in each specimen of urine was not determined by analysis; but when the urine proved, as it usually did, clear and often pale at one time, and high coloured and loaded with lithates at another, the urea was invariably found to exist in largest quantities, as shown by the crystallization of nitrate of urea in those specimens of urine which were free from lithates, although the quantity of urine voided on those occasions was larger than when the lithates were deposited. If, on further examination, a direct relationship should prove to exist between the quantity of urea and uric acid excreted in these cases, another link would be added to the chain of events which appear to exercise a bearing on the causation of gout. At present my information on the subject is too imperfect to warrant such a conclusion, but I have deemed it expedient to draw attention to the facts as far as I have hitherto ascertained them.—*Medico-Chirurgical Transactions, Vol.* 51, 1868, *p.* 45.

37.—ON THE ALLEGED EFFICACY OF THE PEROXIDE OF HYDROGEN AND OZONIC ETHER AS REMEDIAL AGENTS IN DIABETES MELLITUS.

By Dr. F. W. Pavy, F.R.S., Assistant-Physician to, and Lecturer on Physiology at Guy's Hospital.

[Dr. Pavy furnishes the following paper in answer to many enquires which have been made of him as to his experience of the action of peroxide of hydrogen in diabetes.]

Amongst the various remedies that have from time to time been proposed, upon theoretical grounds, for diabetes, oxidising agents hold a prominent position. It has been a favourite idea to regard this disease as arising from a defective oxidation of sugar in the system. Bernard even admits that at one period he was inclined to look upon the artificial diabetes arising from his operation of puncturing the floor of the fourth ventricle as due to a disturbance of respiration leading to an imperfect combustion of sugar in the system. He continues by stating, however, that he was obliged to abandon this theory in the presence of new facts with which it did not accord; and afterwards asserts that it is not by combustion that sugar disappears in the system.

As oxidising agents, the permanganate and perchlorate of potash have been, in their turn, proposed; and more recently, attention has been bestowed upon the peroxide of hydrogen and ozonic ether. A case reported by Dr. Day of Geelong, in the pages of the Lancet for January 11th, 1868, brought these latter agents into prominent notice, and led to high expectations being entertained regarding their efficacy. Dr. Day, after dieting a patient suffering from diabetes, and trying the various medicinal remedies recommended for the complaint, without effect, began to reflect in the following manner upon his case. "While pondering," he says, "over the hopeless condition of my patient it occurred to me that if I could oxidise the sugar that had been taken up in the general circulation, it would be an approach towards the natural mode of its elimination by the lungs. With this object in view, I gave half-drachm doses of the ethereal solution of peroxide of hydrogen, mixed in an ounce of distilled water, three times a day." From the report that follows, an astonishing improvement took place in the state of the patient; and in seventeen days, in the place of an extreme state of distress, we find her condition stated to be as follows: "Says she feels as well as ever she did; never felt better in her life."

Looking at this case as it stands, nothing could be more satisfactory than the result depicted; and I am sorry, for the sake

of therapeutics and those suffering from diabetes, that my own experience does not substantiate the conclusion that might be drawn from it. I have tried both the aqueous and ethereal solutions of peroxide of hydrogen in the complaint, but have not been able to perceive that the slightest benefit has been produced.

A few weeks after the report of Dr. Day's case appeared, I tried the aqueous solution of peroxide of hydrogen in several cases, and closely watched, with the assistance of the students of Guy's Hospital, the results. The agent was obtained from Mr. Robbins, of Oxford-street, and administered in two-drachm doses three times a day. There was not the slightest effect traceable upon the quantity of urine, quantity of sugar passed, or the symptoms of the patient. One patient, indeed, expressed himself rather indignantly upon having what he conceived to be only water administered to him.

I have since tried the ethereal solution of peroxide of hydrogen, or, as it is called ozonic ether; and will furnish the details of a case in which I have recently employed it in Guy's Hospital, and in which a daily analytical examination of the urine was made.

The patient, a man aged 29, had been the subject of diabetes, without any complicating affection, for a period of nearly a year. Upon admission into the hospital, he was placed upon a restricted diet, the food allowed consisting of meat, bran biscuits, eggs, greens, and beef-tea, with three ounces of brandy a day. An astringent mixture had recently been ordered, to check diarrhœa, from which he was temporarily suffering. For five days before the ozonic ether was commenced, the state of his urine was as follows :—

Date.	Quantity of urine per 24 hrs. in oz.	Sp. gr.	Quantity of sugar per fluid ounce in grs.	Quantity of sugar per 24 hrs. in grs.
Dec. 16th	100	1033	26½	2650
17th	110	1036	28¾	3162
18th	100	1037	24¾	2475
19th	95	1031	19½	1852
20th	100	1039	30	3000

Ozonic ether was now administered in half-drachm doses with with water four times a day, and without any other medicinal agent. No alteration was made in the diet. The diarrhœa, under which the patient had been formerly labouring, had previously disappeared. The ozonic ether was continued for nearly three weeks; and the following is an account of the state of the urine during the time :—

Date.	Quantity of urine per 24 hrs. in oz.	Sp. gr.	Quantity of sugar per fluid ounce in grs.	Quantity of sugar per 24 hrs. in grs.
Dec. 21st	90	1039	$31\frac{1}{4}$	2212
22nd	100	1038	$22\frac{1}{2}$	2250
23rd	100	1035	24	2400
24th	110	1033	$19\frac{3}{4}$	2172
25th	110	1025	20	2200
26th	100	1029	24	2400
27th	110	1030	$25\frac{3}{4}$	2832
28th	115	1030	$22\frac{1}{2}$	2587
29th	120	1034	19	2280
30th	115	1032	$20\frac{1}{2}$	2357
31st	110	1039	$28\frac{3}{4}$	3162
Jan. 1st	120	1030	$25\frac{3}{4}$	3090
2nd	120	1031	$19\frac{3}{4}$	2370
3rd	110	1033	$21\frac{1}{4}$	2337
4th	110	1037	$32\frac{3}{4}$	3602
5th	120	1034	$27\frac{3}{4}$	3330
6th	110	1035	$31\frac{1}{4}$	3437
7th	110	1037	$37\frac{3}{4}$	3052
8th	120	1037	$32\frac{3}{4}$	3930

It will be seen from the above report that there was no marked effect either one way or the other observable upon the urine. What slight effect there was, was the reverse of improvement, the urine being higher in quantity, and the sugar larger in amount, towards the end of the period during which the ozonic ether was administered than at the commencement. The patient, as regards his general feelings, expressed himself as not perceiving much difference; if anything, he thought that he had been feeling a little more thirsty, and that his appetite was not so good.

I have come across several cases in private practice in which the ozonic ether has been tried. In none have I been able to learn that any benefit was produced. Indeed the fact of the patients coming to me may be taken as affording evidence that the result was not satisfactory. One patient whom I have recently been attending was glad that I proposed making known my experience, as he had been worried on all sides by this friend and that to try the new remedy for diabetes, as it was called. He took it for two months, and in speaking about it expressed himself in anything but friendly terms towards it. He had lost his appetite, he said, under its use, and I had to listen to a category of other evils that he was sure had been produced by it.—*Lancet, March* 13, 1869, *p.* 358.

38.—CASE OF DIABETES TREATED WITH THE PEROXIDE OF HYDROGEN.

By Dr. W. H. Day, Physician to the Samaritan Free Hospital, and to the Infirmary for Consumption and Diseases of the Chest, Margaret Street.

One or two successful cases are not enough to warrant judgment of the merits of any drug; we must have case after case yield which has obstinately resisted other therapeutic measures before we can pronounce on its worth. If a remedy can be found to control the excessive loss of fluid which is going on in diabetes, and to improve the general condition of the system, we may hope, with a careful diet and regimen, to prolong life for many years in comfort, if not to cure the disease itself. The case of the late Dr. Camplin is a very remarkable one of what may be done with care and judicious management. The specific gravity of his urine, which at one time was as high as 1040, fell to 1016, and without a trace of sugar; but the improvement was more from diet than from any medicine. The good that has been achieved in the present case must be due to the medicine employed rather than to the diet, which has not been carefully observed. The patient has throughout eaten moderately of ordinary bread, and violated the rules laid down by drinking porter frequently. In other respects his diet has consisted chiefly of eggs, fish, and meat.

J. H., aged 57, by occupation a messenger, experienced good health till April, 1868, when he became very weak and languid, lost flesh, and had no appetite. He was told by a medical man that his kidneys were sound, although at this period he passed an excessive quantity of urine. For many years he was addicted to drinking a great deal of beer, but lately he has reformed. In November, 1868, when I saw him for the first time, he was too feeble to walk across the room, and was very worn and emaciated; indeed he could not support himself in an upright posture. He was afraid to eat, from the extreme flatulence and inability to digest food. The action of the heart was very feeble. The liver much exceeded its natural limits, and there was considerable fluid in the peritoneal cavity. The superficial veins of the abdomen were enlarged. The legs were very anasarcous, shining and pitting on pressure, and there were dark ecchymosed spots which threatened to burst. I prescribed the nitro-muriatic acid with taraxacum and gentian, and ordered him to drink a little brandy-and-water. Two days later the specific gravity of his urine was found to be as high as 1045, and to assume the deepest brown colour on boiling with liquor potassæ. During the day and night he passed between ten and twelve pints of very faint straw-coloured urine. As the acid

mixture seemed to suit, I told him to continue it, and ordered in addition two drops of creasote in the form of a pill three times a day. He also took dilute phosphoric acid with glycerine in barley-water for an occasional drink, although his thirst was less than I have ever observed in a case of diabetes. There was another unusual feature in this case: the bowels were almost always moved regularly every day without aid from medicine.

On the 24th of December, as he was not making any satisfactory progress, I determined to give him the ethereal solution of peroxide of hydrogen in half-drachm doses three times a day, in an ounce of water, omitting all other medicine. Three days later the dose was increased to one drachm. A remarkable change for the better at once set in; the urine was reduced in quantity, and the appetite and strength improved.

Urine passed in twenty-four hours:—

1868	...	Nov. 12th	...	11 pints	...	Sp. gr.	1045
1869	...	Jan. 26th	...	7½ ,,	..	,,	1030
,,	...	Feb. 1st	...	6½ ,,	...	,,	1032
,,	...	,, 24th	...	5 ,,	...	,,	1024

March 3rd. He has increased fifteen pounds in weight, and looks altogether another person. His liver is greatly reduced in size, and the abdominal veins are much less prominently marked. No fluid can be detected in the cavity of the abdomen, and the amount of tympanitis is only slight. There is scarcely a trace of œdema in the legs. Dr. Savage, who requested me to look after this patient, concurs with me in attributing the improvement to the employment of the peroxide of hydrogen. —*Lancet, March* 20, 1869, *p.* 396.

39.—REMARKS ON THE TREATMENT OF DIABETES BY OZONIC ETHER.

By A. E. Wilmot, Esq., Bridlington, Yorkshire.

[Mr. Wilmot has had the opportunity of testing the effects of ozonic ether in three cases of diabetes. These cases were attended along with Dr. Hutchinson, of Bridlington.]

Its administration in each case was attended with most satisfactory results, and the patients expressed themselves relieved from the most distressing symptoms. In the first place, it has a most powerful influence upon the cutaneous, nervous, and vascular system, imparting a glow of warmth to the surface of the body, and stimulating the glandular element of the skin. Secondly, it assuages the painful feeling of constant thirst, in some cases more than others, but in all in a

marked degree. Thirdly, it allays restlessness, no doubt from the anæsthetic effect of the ether. Fourthly, it diminishes considerably the quantity of urine voided—in fact, in two out of the three cases, reduced it to the normal amount. The first case (that of a stout elderly lady who was passing seven pints of characteristic secretion in the twenty-four hours) is now apparently quite well; the saccharine matter has disappeared, and the water is normal in quantity. The second case is that of a tradesman who was becoming rapidly emaciated, and passing on an average seven pints and a half of highly saccharated urine in the twenty-four hours—the quantity is now reduced to three pints. The progress of emaciation seems checked. This patient had occasion to leave home for a time, and ceased taking the ether; his symptoms soon became augmented. The third case, that of diabetes in a lady, is complicated with advanced disease of one kidney; but even with that disadvantage, added to its chronicity, the quantity of renal secretion has been brought down from about four quarts to three pints and a half in the twenty-four hours, although it varies in amount. This patient, on coming under treatment, was too weak to hope for much improvement; but her condition, otherwise distressing, is now converted into one of comparative comfort. Fifthly, the elimination of sugar by the kidneys is lessened, probably either by the ozonic ether controlling the excessive elaboration of that material in the liver, or by influencing the hepatic portion of the organic system of nerves, and enabling it to resume its normal function of determining the formation of glycogen by the hepatic cells, thereby converting saccharine elements into an oxidisable substance which becomes resolved into carbonic acid and water, and, in that condition is constantly cast off by the depurating organs of the body.—*Med. Times and Gazette, Dec.* 12, 1868, *p.* 680.

40.—THE THERAPEUTIC VALUE OF BELLADONNA IN REFERENCE TO DISEASES OF THE BLADDER AND URETHRA.

By Reginald Harrison, Esq., Assistant Surgeon to the Royal Infirmary, Liverpool, and Lecturer on Anatomy at the School of Medicine.

I propose briefly to allude to some advantages I have observed to follow the use of belladonna, local and general, in certain disorders of the genito-urinary system.

As a topical application, I have used it with benefit in some of the more obstinate forms of stricture, especially those consequent on injuries of the urethra.

Referring back, we find some of the surgeons of the last century strongly recommending it, where spasm was present, to produce relaxation; but as we are now provided with remedies more certain in their action for combating this complication, this drug has naturally fallen into disuse.

It is not, however, in reference to any antispasmodic influence it may possess, that I purpose to allude, but to the power which I believe it has of directly influencing and effecting a change in the obstructing material. I was first induced to give it a trial in these cases by observing the benefit that followed its application to cicatrices, and growths of a fibrous character resembling them; in one instance especially, an unsightly deformity on a young woman's forehead, the constant application of the extract of belladonna produced a very decided effect; the cicatrice, though not disappearing, became much softer, more like the healthy skin around it, but what was of still more importance, it lost almost entirely the tendency to contraction which is so productive of such painful deformities. I have used it with undoubted advantage in other cases, and I therefore had reason for anticipating an equal benefit from its application to such internal cicatrices as gave rise to inconvenience. Of these, the most distressing and obstinate is the stricture following injury to the urethra. It may be dilated, very often, readily, but soon returns, unless constantly under supervision. Dilatation simply *stretches* the cicatrix, without in any way depriving it of that contractile power which is the essence of the disorder.

Some patients may be instructed how to introduce an instrument for themselves, but such a course, for obvious reasons, is not of universal application. Others may be permanantly relieved by proceedings of a more strictly operative character, and with comparatively little danger, but from these we find they sometimes shrink. It is to meet such cases that I would suggest the use of belladonna.

The most convenient way of applying it is with the Oleum Theobromæ of the Pharmacopœia, which is sufficiently hard at ordinary temperatures to permit of its ready introduction into the urethra. I generally recommend two grains of the extract of belladonna to be used in this way twice a day, in conjunction with the regular introduction of the metallic bougie in gradually increasing sizes; the belladonna should be persevered in for some time after the bougies have been discontinued.

Very great and, I believe, permanent benefit has resulted from this plan of proceeding, and in cases where the bougie treatment *alone* had previously only effected but very temporary relief. I may also add that my observation is confirmed by others, who have given this plan a trial.

Administered internally, belladonna is one of the most valuable anodynes we possess, and it appears to me to be specially applicable to disorders of the urinary system. In reference to its alkaloid atropine, Dr. Anstie remarks, in the first number of the Practitioner, "that it is incomparably the best of all medicinal remedies for every kind of pain in the pelvic viscera. Nothing can approach it in this respect."

The rapidity with which the alkaloid atropia is eliminated from the system is very remarkable. Dr. John Harley, in his Gulstonian Lectures, mentions that he had "repeatedly demonstrated the presence of atropia in the urines of different individuals, eighteen, nineteen and twenty minutes after the subcutaneous injection of the forty-eighth and even the ninety-sixth of a grain of sulphate of atropia."

In addition to the general narcotic effects exercised by the drug, the actual presence of the alkaloid in the urine may further explain the benefit following its administration in urinary affections.

The inconveniences attending the use of belladonna are slight, compared with those of opium and other narcotics; the appetite is not interfered with, and, beyond sometimes a little temporary dimness of vision, no cerebral unpleasantness is experienced.

The cases in which the remedy is generally applicable are those which may be classified under the generic term of "irritable bladder." Its use may be advantageously continued, in conjunction with other expedients, for the removal of any exciting causes that may be present, such as the dilatation of strictures, removal of calculi, and other sources of irritation.

There is a form of irritation not unfrequently observed, both in males and females, more especially the latter, where there is great irritability, accompanied with the deposition in the urine of large quantities of epithelium. The symptoms sometimes resemble those of calculous disorders, but on introducing a sound, a roughened condition of the lining membrane is alone detected. These almost invariably do well under the influence of belladonna. The nocturnal incontinence observed in delicate children, in nearly all cases the results of a simply irritable bladder and nervous system, do well with small doses of atropine combined with general hygienic measures.

In reference to the mode of administration, I have little to add. I generally prescribe the extract of belladonna in grain doses, once or twice a day, in the form of pills; or the solution of atropine, $\frac{1}{20}$ of a grain to $\frac{1}{60}$, very gradually increased, until a slight degree of atropism—dryness of the throat, or dimness of vision—is produced.—*Liverpool Medical and Surgical Reports, Oct.* 1868, *p.* 136.

SURGERY.

BONES, JOINTS, ETC.—AMPUTATIONS, FRACTURES, DISLOCATIONS.

41.—ON LIGATURE OF ARTERIES ON THE ANTISEPTIC SYSTEM.

By Joseph Lister, Esq., F.R.S., Professor of Surgery in the University of Glasgow.

[The danger of secondary hemorrhage, when the ordinary ligature is used, arises from putrefaction, whereby the tissue of the vessel is softened and rendered friable.]

The Antiseptic System places this branch of surgery, like most others, in a new light. One point which it has brought out in striking relief is that a portion of dead tissue is not necessarily thrown off by suppuration, but, unless altered by putrefaction or artificially imbued with stimulating salts, serves as pabulum for the surrounding living parts, which remove it by a sure process of absorption. Hence the death of a portion of the external coat included in the ligature does not of itself render it a cause of suppuration. And I conceived that if a silk thread, steeped in some liquid capable of destroying the septic organisms in its interstices, were tied round an artery, and left with short-cut ends in a wound dressed antiseptically, the foreign body, soon losing, by diffusion into the circulation, the stimulating salt with which it was saturated at the outset, and being in its own substance as unstimulating chemically as a pellet of lead from a fowling-piece, would either remain, like the latter, permanently encapsuled, or itself experience absorption together with the dead tissue in its grasp. In either case, being destitute of irritating properties, it should leave the primitive strength of the arterial coats unimpaired; when the objection to tying near a large branch would cease to exist. The wound meanwhile would, under proper management, close rapidly, without any deep-seated suppuration, and would be efficiently protected against the evil influences of impure atmosphere. In short, the ligature of an arterial trunk in its continuity would be brought to a state of perfection.

I have subjected these theoretical views to the test of

experience, and though the results have not turned out in all respects exactly as I had anticipated, yet those finally arrived at appearing satisfactory, I now present to the readers of the Lancet an account of all that I have done in the subject.

Case of ligature of the carotid artery in the horse with silk thread, on the antiseptic system.—On the 12th of December, 1867, I tied the left carotid artery of a horse in the middle of the neck with a piece of "purse silk" saturated with a strong watery solution of carbolic acid, cutting the ends short and dressing the wound antiseptically. Healing took place without any suppuration, and with remarkable absence of swelling or tenderness. Nearly six weeks after the operation I investigated the parts. On laying open the vessel, I found at the cardiac side of the ligature a firm adherent clot an inch and a quarter long; but at the distal side coagulation had been entirely prevented by the reflux current of blood through a branch about as large as the human vertebral, which took origin as close to the ligature as was possible. Under such circumstances secondary hemorrhage would necessarily have occurred had the thread been applied in the usual way. Here, however, the artery appeared as strong at the part tied as elsewhere. The cul de-sac showed indeed some irregularity, in consequence of the puckering of the internal and middle coats; but the surface appeared completely cicatrised, and presented the same character as the natural lining membrane of the vessel; and the ligature, which seemed as yet unaltered, was found lying dry in a bed of firm tissue; that within the noose being apparently a new formation, in place of the portion of external coat killed by the tightly tied thread; while, externally, the constriction necessarily caused in the first instance by the operation had been filled in by a similar compact structure.

Thus far experience had proved precisely in accordance with my expectations, so that I felt justified in carrying a similar practice into human surgery.

Case of ligature of the external iliac artery with silk thread on the antiseptic system.—On the 29th of January, 1868, I tied the left external iliac artery in a lady, fifty-one years of age, on account of an aneurism of the upper part of the femoral, as big as a large orange, and reaching somewhat above Poupart's ligament. I was informed that it had existed for four years, growing more rapidly of late, and causing severe agony, which had made her keep entirely to bed for the last few weeks, and had deprived her of appetite, and reduced her strength. A silk thread was applied, as in the last case, except that it had been steeped for two hours in undiluted liquid carbolic acid instead of the watery solution, to make sure of the destruction of all septic organisms lodged in its interstices. The wound, being

dressed antiseptically, became superficial without suppuration, the patient meanwhile experiencing no febrile disturbance, her appetite returning as soon as the sickness from chloroform subsided. On the fourteenth day she sat bolt upright in bed without inconvenience. Four weeks after the operation, the superficial sore being completely cicatrised, she was allowed to walk about her room; and just six weeks from the date of the application of the ligature, she went down three flights of stairs and walked for some time in the streets, and then up again to her room without over-fatigue. The aneurism was free from pulsation, and much reduced in size.

She continued for about ten months in fair health and strength; but, in the latter part of November, became affected with a peculiar spasmodic disorder of the respiration, and on the morning of the 30th of the month, while sitting up in bed, she suddenly exclaimed that something had given way within her, and that she was dying, and then immediately expired. Next day I made a post-mortem examination, when the idea which she had expressed proved correct,—an aneurism of the descending part of the arch of the aorta having given way, and discharged an enormous quantity of blood into the mediastinal and subpleural cellular tissue. The parts concerned in the operation having been removed and dissected, the following appearances were disclosed:—The aneurism was not entirely obliterated; but remained about the size of a cherry or a large filbert, of somewhat fusiform shape. The upper two-thirds were solid, being occupied by firm coagulum incorporated with the sac. The lower third, situated just at the bifurcation of the common femoral, had been kept free from coagulation by the regurgitant stream of blood from the profunda into the superficial trunk. This part of the sac appeared constituted by the wall of the vessel, very slightly distended. The external iliac artery was considerably shrunk throughout, and tapered from each end to near the middle, where it was only about a twentieth of an inch in diameter. In the greater part of its length the structure of the dwindled vessel could be distinctly recognised, with adherent coagula in the interior, decolorised and otherwise altered. But at the narrowest part the artery was reduced to mere fibrous tissue, constituting a dense white band five-eighths of an inch long, from the middle of which was seen projecting at one side a round, buff-coloured appendage about a line in diameter, somewhat obscured by a trifling amount of inflammatory condensation of texture in the immediate vicinity. On scratching this little body with the point of a knife, I found it to be a very thin-walled capsule, containing the knot of the ligature, with two tapering ends, which were shorter than the thread was cut at the operation, while the noose had vanished

altogether. The surface of the knot also showed clear indications of having been subjected to an eroding agency, similar, no doubt, to that exerted by granulations upon dead bone absorbed by them. Besides the remnant of the ligature, the tiny capsule contained a minute quantity of yellowish, semi-fluid material, looking to the naked eye like very thick pus. Under the microscope, however, pus-corpuscles were seen to form but a small proportion of its constituents, which were principally rounded corpuscles of smaller size, and fibro-plastic corpuscles, together with some imperfect fibres and granular material. In addition to these elements were some which at first puzzled me; but which turned out to be fragments of silk fibre, of various lengths, and of jagged, tapering, or otherwise irregular forms, and many of them greatly reduced in thickness, contrasting strongly with the uniform bands of a fresh piece of silk from the same reel that had furnished the ligature.

Mingled with the puriform fluid were also some delicate filaments of silk, visible without the microscope; and these seemed to retain their natural elasticity. Nor was there anything about the more minute pieces into which the fibres had been so strangely chopped up, to indicate that they were undergoing a process of solution or softening by the fluid that soaked the thread. They had rather the appearance of having been superficially nibbled so to speak; confirming the impression conveyed by the naked-eye characters of the knot, that the silk had been eroded by the absorbing action of the surrounding parts. Indeed, considering the organic origin of silk, the remarkable thing seems to be, not that it should be absorbed by the living tissues, but that it should resist their influence so long.

Why it was that the parts in immediate contact with the silk should have assumed so imperfect a structure is a difficult question, but one of great interest: because, although that structure could not be called pus, it was certainly a very near approach to it; and it is impossible to say that we had not here an incipient abscess. There could be no doubt that the presence of the thread was in some way or other the cause, and I think we can hardly be wrong in assuming that, in order to give rise to such degeneration of tissue, it must have operated as a persistent, if trifling, source of abnormal stimulation. Now, as putrefraction is here out of the question, and as the substance of silk is not chemically stimulating, we seem shut up to the conclusion that the thread must have occasioned disturbance of a mechanical nature. Further, the effect in question seems to be essentially connected with the disintegration of the silk. For in the horse's carotid the silk ligature, having remained unaltered during the six weeks that had passed after the operation, was

found surrounded on all sides by compact tissue; and in the present case, so long a period as ten months having elapsed before the puriform condition was observed in an apparently incipent stage, it is probable that the thread had lain for a long time inert, producing irritation only when partially absorbed. If then we inquire how disintegrating silk could prove a source of mechanical irritation, it seems not improbable that it may have been from the sharp and jagged fragments of the fibre perpetually fretting the elements of the living tissue around them. This view, if correct, would explain the curious fact observed by Lawrence and others, that when fine silk ligatures had been left with short-cut ends in a stump, though the wound might heal without their separation in the first instance, they were liable to make their appearance subsequently, sometimes at so late a period as seems to exclude the idea of putrefaction having occurred from organisms introduced in the threads. Indeed, such ligatures occasionally showed themselves encapsuled in little nodules in the cicatrix, without suppuration occurring at all. In other words, the apparently soft silk, instead of remaining like a smooth leaden pellet permanently imbedded in the place where it was first introduced, made its way to the surface, with or without suppuration, like a sharp spiculum of rigid glass; the silk being in its minute structure comparable to the lead when in the primitive condition of smooth continuous fibres, and to the glass spicula when in the form of jagged fragments as the result of partial absorption.

But whatever may be thought of this explanation, it is clear that if there is any chance of silk, though used antiseptically, giving rise, even in exceptional cases, to abscess in the vicinity of an artery tied with it, this is a serious objection to its employment; and as the near approach to suppuration in the present instance was undoubtedly occasioned by the persistent presence of the thread, the case, while interesting as affording evidence that silk is susceptible of absorption, suggests the expediency of substituting for that material some other substance which can be more readily taken up by the tissues.

The use of "animal ligatures," of cat-gut leather, or tendon, was long since tried and abandoned as unsatisfactory; but after the experience which the antiseptic system has afforded of the disappearance, without suppuration, of large dead pieces of skin and other textures, there could be little doubt that threads of animal tissue, if applied antiseptically, would be similarly disposed of.

And even if chemical processes should have been used in preparing such threads, it did not seem likely that this would interfere with their absorption; for I knew that the free action of carbolic acid on blood and sloughs had no such deterring

influence, and I have long been satisfied that the injection of a strong solution of perchloride of iron or tannic acid for the cure of nævi produces subcutaneous sloughs, which are imbued with the ingredients injected, and yet disappear, as a rule, without the formation of pus.

In order to put the antiseptic animal ligature fairly to the test, I made the following experiment :—

Ligature of the carotid artery in the calf on the antiseptic system, with threads composed of animal tissue.—On the 31st of Dec., 1868, I tied the right carotid artery about the middle of the neck in a healthy calf a few days old, the animal being under chloroform. Ligatures of two different kinds were employed, at an interval of about an inch and a half, the sheath of the vessel being left undisturbed in the intervening part. The cardiac ligature was of home manufacture, composed of three strips of peritoneum from the small intestine of an ox, firmly twisted together into a three-fold cord. The distal thread was of fine catgut, called "minikin gut" by the London makers. Both had been soaked for four hours in a saturated watery solution of carbolic acid, which swelled and softened them, so that the thread of my own making was too large to enter the eye of the aneurism needle except near the ends, where it was thinner than elsewhere. This substantial ligature bore the strain of trying well, but the fine catgut broke as I tightened the noose. I did not, however, remove it, but, having a second piece at my disposal, passed it round at the same place, and with gentle traction completed the knot. There were thus two ligatures of the gut at the distal side. All were cut short, except one end of the catgut, which I purposely left about three-quarters of an inch long, to give a better opportunity of ascertaining what would become of the foreign material. The antiseptic arrangements were as follows :—Before the operation the hair of the part was cut short, and a solution of carbolic acid in four parts of linseed oil (preferred for its cheapness) was rubbed well into the skin, to destroy any putrefactive organisms lying amongst the roots of the hairs, for any so situated might escape the action of the external antiseptic dressing, and communicate putrefaction to the discharges, and thence to the interior of the wound. The sponges used in the operation were wrung out of a watery solution of the acid (1 to 40), and all instruments introduced into the wound, together with the fingers of my left hand and the copper wire used for sutures, were treated with the same lotion, some of which was poured into the wound after the introduction of the last stitch, at one of the intervals left for the escape of discharge, to make sure against the chance of any fresh blood which had oozed out during the process of stitching having regurgitated and taken

living germs in with it. The external dressing was a towel saturated with the oily solution, folded as broad as the length of the neck, round which it was wrapped so as to extend freely beyond the wound in all directions, prevented from slipping backward and forward by being stitched to a halter round the head, and to a girth behind the forelegs, while a bandage rolled round it kept it applied accurately to the surface. A sheet of gutta-percha tissue, to prevent contamination of the antiseptic towel from without, and another roller, completed the dressing; and a "cradle" was placed upon the neck to check lateral movements which might disturb it. I have described these particulars because I am more and more convinced of the necessity for scrupulous attention to details such as the germ theory dictates, in order to attain anything like uniformity of successful results.

A few ounces of the oily solution were poured daily over the towel for the first week, after which the dressings were left untouched for three days, and then entirely removed. The wound was found quite dry and free from tenderness, and the cloth showed only a superficial bloody stain. The stitches being taken out, a drop of pus escaped from the track of the suture next the head, but this was the only appearance of suppuration in the case from first to last, and on the separation of the scab, a few days later, a sound cicatrix was disclosed. A month (thirty days) after the operation the animal, which had continued in perfect health, was killed, and the soft parts of the neck below to the spine were removed for examination. On dissection I was struck with the entire absence of inflammatory thickening in the vicinity of the vessel, the cellular tissue being of perfectly normal softness and laxity. On exposing the artery itself, however, I was at first much disappointed to see the ligatures still there to all appearance as large as ever. But had I borne in mind what I had observed in some of my earlier cases of compound fracture treated antiseptically, I should have been prepared to find these threads present in appearance, though absent in reality. It may be well for me to quote from the account I have before given of one of these cases. It was a compound fracture of the leg, produced by direct violence, with a wound of considerable size, and a great deal of extravasation of blood into the limb. In accordance with the practice which I then followed, a piece of lint soaked with undiluted carbolic acid had been placed over the wound, and had formed with the blood a firm crust. "Nearly three weeks after the accident I was detaching a portion of the adherent crust from the surface of the vascular structure into which the extravasated blood beneath had been converted by the process of organisation, when I exposed a little spherical cavity about as big a pea, con-

taining brown serum, forming a sort of pocket in the living tissues, which when scraped with the edge of a knife, bled even at the very margin of the cavity. This appearance showed that the deeper portions of the crust itself had been converted into living tissue. For cavities formed during the process of aggregation, like those with clear liquid contents in a Gruyère cheese, occur in the grumous mass which results from the action of carbolic acid upon blood; and that which I had exposed had evidently been one of these, though its walls were now alive and vascular." Thus the dead, but nutritious mass, had served as a mould for the formation of new tissue, the growing elements of which had replaced the materials absorbed, so as to constitute a living solid of the same form.

Hence it might have been anticipated that the ligatures of peritoneum and catgut placed on the calf's carotid would, after the expiration of a month, be found transformed into bands of living tissue. Such was, in truth, the case, as was apparent on closer examination. They had, indeed, a deceptive resemblance to their former condition from the persistence in their substance of the impurities of the original materials, the dark adventitious particles being of mineral nature incapable of absorption, so that they had remained as a sort of tattooing of the new structure. Nevertheless a marked alteration in colour had taken place, especially in the distal ligature, where the dirty-grey of the softened cat-gut had changed to a dirty-pink tint. The two pieces of catgut which had been tied round the vessel at that part had become, as it were, fused together into a single fleshy band, inseparably blended with the external coat of the artery. The knots were nowhere discoverable, and the only indication of the end which had been left long at the time of the operation was the presence of a black speck here and there upon a delicate thread of cellular tissue in connection with the vessel. The cardiac ligature was in like manner continuous in structure with the arterial wall. The short cut ends had disappeared; but the massive knot was represented by a soft smooth lump, which appeared at first entirely homogeneous, except that it was speckled with dark particles, as before referred to. On section, however, I discovered in the interior of the mass, and lying close to the wall of the artery, a small residual portion of the original knot, of comparatively firm consistence, and with the three-fold twisted character of the cord plainly visible. It was quite distinct from the living tissue that surrounded it, so that it could be readily picked out from its bed with a pair of needles. A slender and irregular remnant of the noose was also found lying in a sort of tubular cavity, extending about half round the vessel.

Thus the process of organisation had not yet quite invaded

the entire thickness of the foreign solid, and it was a happy circumstance that the cord had been so constructed that the distinction between the old structure and the new could be plainly recognised.

Ample as was the evidence afforded to the naked eye of the organisation of these ligatures, it was satisfactory to find it confirmed in the clearest manner by the microscope. A bit of the knot, having been teazed out with needles in a drop of water, presented, like a fresh piece of peritoneum, the wavy bundles of parallel fibres characteristic of perfectly developed fibrous tissue. Adhering to the surface of the remnant of the ligature was some soft opaque material, readily washed off with water, consisting of corpuscles of different forms, most of them caudate or fibro-plastic, but some spherical, though not resembling those of pus; and here and there fragments of the original peritoneal tissue, affected more or less with insterstitial cell-development. At a short distance from the remains of the old thread, the fleshy material which had been formed at its expense proved to be a most beautiful example of fibro-plastic structure, the coarse fibres which mainly constituted it being composed of very large elongated cells, often containing several nuclei, and presenting in their course branchings and thickenings of various forms. Here and there were some fibres more perfectly formed, and also cells of a more rudimentary character. Again, the band which had resulted from the organisation of the two fine threads of catgut, which, from the smallness of their bulk had no doubt vanished early, having had longer time to perfect its structure, was a comparatively well-developed form of fibrous tissue, consisting of coarse fibres, rather than of elongated cells, being thus intermediate between the merely fibro-plastic material of more recent growth and the completed texture of the original thread. For it is to be remarked that a piece of catgut exhibits under the microscope abundance of perfect fibrous tissue. A more favourable period for the investigation, with a view to establishing the nature of the change which ligatures of animal tissue experience under antiseptic management, could hardly have been selected.

Between the parts tied the calibre of the artery was occupied by adherent coagulum, which was for the most part decolorised, and exhibited under the microscope fibro-plastic cells of irregular forms. A similar clot was present between the distal ligature, and a small branch that arose about a quarter of an inch beyond it. But between the proximal ligature and the heart the formation of a coagulum had been entirely prevented by a large vessel taking origin immediately above the part tied, which had thus borne for a month the full brunt of the cardiac impulse. Yet the vessel, so far from showing any sign of giving way, as

it would inevitably have done had it been tied in such a situation without antiseptic precautions, appeared to have derived additional strength from the operation. The encircling ring of new tissue incorporated with the arterial wall must have had a corroborative effect; and within its grasp the inner coats, which seemed to have been but imperfectly ruptured by the soft and substantial ligature, were considerably thickened, and had coalesced so as to form a strong cul de sac, the irregularities of which had been smoothed over by a little fibrinous deposit, which had assumed the characters of a firm fibrous tissue, and presented a free surface undistinguishable from that of the lining membrane of the artery.

At the situation of the distal ligature the structure of the vessel seemed entirely unaffected. The middle coat was seen in longitudinal section as a pink streak between two white lines, representing the external and internal tunics, neither thicker nor thinner than in neighbouring parts. The catgut threads had been tied too gently to produce rupture of the internal and middle layers, and their presence and the constriction which they occasioned, whatever may have been their effect in the first instance, had left no permanent marks of disturbance; while the fleshy band that had replaced them, though in time it would doubtless have dwindled to an insignificant filament, was at least a temporary addition to the strength of the artery.

These appearances at the distal ligature are calculated to revive under a new aspect the old question whether it would not be better always to avoid rupture of the internal and middle coats, which could easily be done by using a pretty thick piece of catgut softened by steeping it in a watery solution of carbolic acid. In this way the wall of the vessel would be left from first to last entirely intact. This, however, is probably a matter of indifference. Indeed, judging from the condition of the artery at the cardiac ligature, the injury done to the vessel at the outset by tight tying seems to lead to changes which increase its power of resistance, which was certainly severely tested in the present instance.

It appears, then, that by applying a ligature of animal tissue antiseptically upon an artery, whether tightly or gently, we virtually surround it with a ring of living tissue, and strengthen the vessel where we obstruct it. The surgeon, therefore, may now tie an arterial trunk in its continuity close to a large branch secure alike against secondary hemorrhage and deep-seated suppuration,—provided always that he has so studied the principles of the antiseptic system, and so carefully considered the details of the mode of dressing best adapted to the particular case in hand, that he can feel certain of avoiding putrefaction in the

wound. For my own part I should now, without hesitation, undertake ligature of the innominate, believing that it would prove a very safe procedure.

Catgut, manufactured from the small intestine of the sheep, may be had at a very low price, from the thickness of a horse-hair upwards. In the dry state it is objectionable from its rigidity, and also from a tendency of the first half of the knot to slip before the second half is secured. Water renders it perfectly supple, and as little liable to slip as waxed silk. But if a watery solution of carbolic acid is used for the purpose of making it antiseptic, the protracted immersion requisite to ensure completeness of the effect makes the finer kinds too weak and the stouter too clumsy. The method which I have found to answer best is to keep the gut steeping in a solution of carbolic acid in five parts of olive oil, with a very small quantity of water diffused through it. A larger proportion of the acid would impair the tenacity of the thread. If a mere oily solution is employed, the gut remains rigid, the oil not entering at all into its substance. But a very small quantity of water, such as the acid enables the oil to dissolve, renders the gut supple without making it materially weaker or thicker. And, curiously enough, the presence of this small amount of water in the oily solution gradually brings about a change in the gut, indicated by a deep-brown colour; after which it may be placed in a watery solution for a long time without swelling, as a portion prepared in a simple oily solution does. This is a great convenience; for an oily solution is unpleasant to work with during an operation, and exposure to the air soon renders gut supplied with water rigid from drying. But when it has been treated in the way above recommended, it may be transferred to a watery solution at the commencement of an operation, and so kept supple without having its strength or thickness altered.

For tying an arterial trunk in its continuity, catgut as thick when dry as ordinary purse-silk, will be found best. But for ordinary wounds, where, if one ligature happens to break, another can be easily applied, much finer kinds may be employed, and are convenient from their smaller bulk. For every-day use, a small oil-tight capsule may be carried in the pocket-case, and this can be replenished from a larger stock as may be necessary. I have had a small silver bottle, with well-fitting screwed top, adapted to my caustic-case, and this contains two little rods of wood, with gut of two sizes wound upon them, with a few drops of the antiseptic oil; and now that torsion has almost entirely superseded the ligature in ordinary wounds, this small supply will probably last me for months.—*Lancet, April* 3, 1869, *p.* 451.

42.—ON THE ANTISEPTIC SYSTEM OF TREATMENT IN SURGERY.

By Joseph Lister, Esq., F.R.S., Professor of Surgery in the University of Glasgow.

[In compound fracture, as a general rule, healing by scabbing, should be aimed at, by leaving the deeper layers of the dressing used to form the scab, and applying the antiseptic externally. If the antiseptic is allowed to penetrate to the wound, it stimulates the tissues to granulation and suppuration.]

The advantages of healing by scabbing are so great that it is worth while to endeavour to attain them, and I have been long striving to improve the method of dressing, so as to get rid, if possible, of the attendant risk. A plan which has, in most cases, answered well when the putty has been used, is to make the permanent dressing of two or three layers of lint somewhat larger than the wound, wrung out of a pretty strong solution of carbolic acid in oil, say one of acid to four of oil, and covered with a piece of oiled calico or linen rag extending about an inch beyond the lint in every direction. Over this is applied a stratum of antiseptic putty, which is changed daily, or once in two days, according to the amount of discharge. The blood from the wound soaking into the lint is acted on by the carbolic acid, and changed into a firm substance which consolidates the deep dressings into a crust or scab, and this crust, while sufficiently thick over the wound to prevent the carbolic acid of the putty from penetrating to the raw surface, is so thin at its margins formed by the rag as to be there kept antiseptic through and through. Then, in changing the putty, the first thing seen on lifting up its edge is the thin margin of the calico ; and even if this be accidentally raised a little, its antiseptic property prevents any mischief from resulting. The putty is spread on calico, and the calico is applied next to the deep dressing, to prevent adhesion, while the external surface of the putty is covered either with thin block tin or sheet lead, or, what more recently we found to answer quite as well, gutta percha tissue, which, though it permits carbolic acid to escape through it, is not objectionable on that account if the putty be sufficiently thick, while the gutta percha, like the metallic plate, prevents the putty from becoming dry and hard. The putty is made to overlap the permanent dressing well on all sides, and I may remark that, whether the impermeable antiseptic guard be composed of putty or not, it is of the utmost importance that it should extend freely beyond the source of the discharge in every direction, so that the putrescible fluid may have to flow for some distance beneath it before it reaches the atmosphere or any dressing containing active putrefactive organisms. The degree

of overlapping of the crust by the external dressing must vary according to the amount of discharge which may be anticipated. When this is large, it should be to the extent of three or four inches. Failures have undoubtedly often occurred for want of attention to this essential point.

But though this method will, with proper care, generally succeed, it would be very desirable, if possible, to get rid of the trouble involved in it. At one time I hoped this might be done by means of the plaster above mentioned, by employing a layer of it instead of the calico as the upper part of the permanent dressing, so that the adhesiveness of the emplastrum might keep the whole deep dressing securely applied to the skin, except at limited spots where the discharge might ooze out; another layer of plaster being used instead of the putty, with calico moistened with a watery solution of the acid interposed to prevent adhesion of the two layers of plaster. My anticipations, however, have not been verified in this respect. For the plaster, though it answers extremely well for an external antiseptic guard, whether in compound fracture, incised wounds, or abscesses, has proved unsuitable for the permanent dressing. The substance of the emplastrum becomes softened by the solution of carbolic acid used to moisten the calico, and permits it to enter beneath it and soak into the lint below, and stimulate the raw surface to granulate and suppurate, and this was what occurred in the case of displaced foot above mentioned. At the same time the lint is kept moist, instead of forming a dry crust, and hence it may gradually shift its place along with the plaster that covers it, involving the risk of leaving the wound insufficiently overlapped, if not exposed. I have experienced this inconvenience in two cases of compound fracture which have been treated in this way. One of these was an old lady, of 75, in whom the *os humeri* was severely comminuted just above the elbow-joint, with a considerable wound from which six loose fragments were extracted; the other, was a boy, 12 years old, whose right thigh was much contused as well as broken by machinery. These cases, indeed, have done well; osseous union having occurred as early as if the fractures had been simple ones. But in both of them the wounds healed by granulation instead of by scabbing.

With the view of getting over these difficulties I sought to obtain some kind of antiseptic cement, by which a portion of dressing might be glued down firmly upon the skin. Among other materials I tried shell-lac, and, in so doing, I accidentally hit upon a substance which appears preferable to the plaster for almost every purpose. I found that this resin could be mixed with carbolic acid in any amount by aid of heat, the result, when cooled, varying, according to the quantity of the acid, from brittle-

ness to fluidity, the intermediate proportions giving a firm but flexible solid with a certain degree of elasticity, approaching to some extent the characters of caoutchouc. It further turned out that the lac thus associated with the carbolic acid retained it with great tenacity* so that a thin layer spread on calico may be used to store up a large quantity of the antiseptic, forming an application which retains its virtues for days at the temperature of the body, and at the same time, fails to irritate the skin. It has also this great advantage over the lead plaster, that it cannot be softened by either a watery or oily fluid. The only imperfection which it appeared to shew, when used in practice as an external antiseptic guard, was that when long applied to the skin it adhered to the surface, whereas it is desirable that such a dressing should adhere very slightly if at all. This objection to it I attempted to obviate by spreading it upon gutta percha tissue which, though insoluble in carbolic acid, allows it to travel through its substance. The lac when thus lined with gutta percha proved none the less efficient as an antiseptic, and, being perfectly devoid of adhesiveness and of smooth surface, shed the discharge in a most perfect manner, greatly excelling, in this respect, the lead plaster. But it had one fault, viz., that when subjected to much bending, as at the fold of a joint, the gutta percha cracked and admitted the discharge which, gradually insinuating itself, detached the gutta percha more or less extensively, and introduced an element of risk through the interposition of a layer of liquid between the antiseptic lac and its lining. This fault has been got of by reducing the gutta percha to a mere film, incapable of affording lodgment for fluid, by brushing over the antiseptic lac with a weak solution of gutta percha in bisulphide of carbon which, rapidly evaporating, leaves a coating of microscopic thinness, yet effectual for preventing adhesion. We have now given this lac dressing a sufficient trial in wounds and abscesses to entitle me to recommend it with confidence.†

* In this respect, lac differs altogether from India-rubber, which, though it may be impregnated with the acid to any degree, parts with it rapidly.

† This plaster is supplied at a very moderate price by the New Apothecaries' Company, Glassford Street, Glasgow, to whom I am much indebted for the interest and pains they have taken in bringing it to perfection. The following is the mode of its manufacture:—Take of shell lac, 3 parts; crystallised carbolic acid, 1 part. Heat the lac with about a third of the carbolic acid over a slow fire till the lac is compietely melted; then remove from the fire and add the remainder of the acid and stir briskly till the ingredients are thoroughly mixed. Strain through muslin, and pour into the machine for spreading plaster; and, when the liquid has thickened by cooling to a degree ascertained by experience, spread to the thickness of about one-fiftieth of an inch. Afterwards, brush the surface of the plaster lightly with a solution of gutta percha in about thirty parts of bisulphide of carbon. When the sulphide has all evaporated, the plaster may be piled in suitable lengths in a tin box without adhering, or rolled up and kept in a canister.

For an antiseptic dressing that is intended to be changed from time to time, perfect absence of adhesiveness is a most valuable property; not only because it permits all discharge to escape beneath it into the porous material placed outside to absorb it, but because it avoids traction upon any deeper dressing or upon the skin during the process of withdrawing it, with the concomitant risk of regurgitation of air or liquid charged with living putrefactive organisms.

But for the permanent dressing in compound fracture this complete want of adhesiveness is the converse of what we desire. Here, the material employed, being designed to form part of the scab, should stick to the skin or to anything else that lies beneath it. The lac prepared as above described may, however, be readily made suitable for this purpose, by rubbing off the film of gutta percha by firm friction with a dry cloth, and then brushing the surface over with liquid carbolic acid. It then, at once, assumes a sufficient degree of adhesiveness.

In order to ensure healing without suppuration, it is requisite, as we have seen, not only to prevent the spreading of putrefaction into the wound, but also to protect the raw surface from perpetual stimulation by the carbolic acid. In the mode of dressing above described, in which the putty was employed, the latter object was attained by means of layers of lint forming a crust too thick to be penetrated by the acid supplied externally; and the same plan would no doubt, succeed as well with the lac. But to trust to the mere thickness of a penetrable crust, is not altogether satisfactory. It would clearly be better, if possible, to protect the exposed tissues from the stimulating antiseptic in the lac by a layer of some substance chemically impermeable to carbolic acid. A metallic plate possesses this property; and in its more flexible forms, such as thin block tin or sheet lead, it seems likely, at least in ordinary cases, to answer well. I have, as yet, only had opportunity to try this method in two cases, but both of these have presented points of interest which make them deserving of mention.

Case of Contused Wound treated with Block Tin and Antiseptic Lac.—The first was a contused wound, three inches long, over the lower part of the tibia, with some undermining of the skin, in a young man of 20, occasioned by the limb being violently squeezed between a heavy iron pipe and a fixed piece of machinery. Happening to be at the Infirmary soon after his admission, I dressed the case myself, washing and syringing out the wound with a saturated watery solution of carbolic acid, and covering it with a well-fitting piece of thin block tin of rather larger size, washed with the watery solution, and then applying a piece of lac-plaster, deprived of its gutta percha layer, overlapping the tin freely on all sides. A piece of calico was placed

outside the lac-plaster, to prevent adhesion of its edges to a dry cloth, which was wrapped round the leg to absorb discharge, and was intended to be changed. Next day, there was a good deal of sero-sanguineous effusion on the cloth, for which another was substituted, moistened with a solution of carbolic acid in four parts of olive oil. The same was afterwards done daily; the discharge diminishing rapidly, and the limb remaining free from swelling or pain, and the constitution from disturbance, till, on the fourth day, the patient, who was a silly youth, was seized with a desire to see the injured part, and tore off all the dressings. This foolish proceeding on his part gave us the opportunity of making an interesting observation. The wound was found perfectly level with the general surface of the skin, being filled with a clot of smooth surface corresponding to that of the tin which had covered it, while the edges of the skin were pale and natural in appearance. The dressing was re-applied as before, the wound being superficially washed with carbolic acid lotion in the process. Two days later the patient again, without any reason, laid bare the wound, which still presented the same characters, except that the surface of the smooth clot showed, here and there, some minute whitish specks, probably in consequence of the action of the watery solution of carbolic acid with which it was washed two days previously. A similar dressing was again employed, the use of carbolic lotion being again necessarily involved. After two more days, that is to say a week after the accident, the patient, though free from symptoms, having again removed the dressings, the wound was again examined. It was free from pus or odour of putrefaction, but its surface was mottled with red and yellow spots, and was not quite level. The dressing was continued one day longer, when it was abandoned, as the patient could not be induced to leave it alone, water-dressing being used instead; and on the following day the wound presented the characters of a healing superficial granulating sore. Two days later, he was so unruly that he was discharged for misconduct.

In the following case we have had the opportunity of seeing the effects of this mode of dressing when left undisturbed.

Case of Compound Fracture of the Leg treated with Block Tin and Antiseptic Lac.—On the 3rd of October, 1868, a porter, 25 years old, was unloading a waggon in a warehouse, when a box, weighing about four hundred-weight, slipt, and striking him upon the left leg, knocked him down over an opening in the floor, through which he would have fallen into the room below had not the heavy box, pressing upon the limb, pinned him down and kept him suspended. When rescued from this situation, he was taken to the Infirmary, where my house-surgeon,

Mr. Malloch, found the leg much distended with extravasated blood, with a wound, three-eighths of an inch in length, on the inner side, about midway between the knee and ankle, bleeding freely and communicating with a transverse fracture of the tibia. A probe smeared with an oily solution of carbolic acid to prevent the introduction of septic particles) could be introduced beneath the undermined fascia for about three inches in every direction except downwards, and also passed, for the same extent, directly outwards behind the tibia which was felt to be denuded of its periosteum. Having injected into the wound, with a syringe, several ounces of a saturated watery solution of the acid, and diffused it freely through the limb by pressure, to mix it with the extravasated blood, Mr. Malloch placed a piece of thin block tin about an inch square over the orifice, and, after pressing out as much as possible of the blood and watery solution, applied a piece of lac plaster deprived of its gutta percha lining, overlapping the tin a couple of inches in every direction, and over this a folded cloth moistened with a solution of carbolic acid in four parts of olive oil. The limb was then put up in lateral pasteboard splints. This treatment relieved the severe pain which he was suffering; but it returned in the course of the next few hours, during which very free hemorrhagic effusion occurred. Next day the discharge became greatly diminished, and in the course of the following day it ceased entirely. The pain also left him about twelve hours after the accident and never returned. The after treatment consisted for the first two days, in renewing the oily cloth once in the twenty-four hours; but from the third day onwards the cloth was left permanently upon the limb and merely brushed over with a mixture of equal parts of carbolic acid and oil, the inner splint being raised for the purpose without disturbing the limb, which lay upon its outer side with the knee bent. After the sixth day, the antiseptic oil was only applied once in forty-eight hours. On the third day, some wrinkling of the epidermis indicated subsidence of the swelling which afterwards fell rapidly till, by the eleventh day, the calf was almost of natural size, having shrunk away considerably from the splint. His pulse never rose above 82, which was its number the day after the accident, and his general health was from that time forward quite unaffected.

Ten days after the receipt of the injury, it was noticed that the oily cloth, which for a week past had indicated complete absence of discharge, exhibited an appearance of additional staining, corresponding to two or three drops of red serum which seemed to have been pent up beneath the lac plaster by inspissation of the blood and serum round its margins, till some accidental cause, such as the shrinking of the limb, cracked the

dried exudation. Having been led to disturb the dressing to some extent in investigating the source of this discharge, I thought it best to remove it entirely, protecting the wound at the moment of its exposure with a bit of antiseptic lint. The under surface of the lac gave distinct indications of being impregnated with carbolic acid. The wound presented a very interesting appearance. It had shrunk considerably; but its margins resembled those of a perfectly recent wound; and its orifice was occupied by a projecting dark clot, which to the naked eye scarcely differed from a fresh coagulum. Hence there seemed reason still to hope for healing without suppuration, if the original mode of dressing were repeated. Accordingly, the tin smeared with carbolic acid was replaced, and overlapping it a fresh portion of lac plaster, rendered adhesive by touching it with carbolic acid after removing the film of gutta percha, except in a narrow space from the centre to one side, where the gutta percha was left, to provide for the escape of discharge. A dry cloth and a splint completed the dressing. Two days later, in order to maintain the lac plaster in an antiseptic condition, two layers of calico, moistened with a solution of carbolic acid in four parts of olive-oil, were substituted for the cloth; and afterwards, at intervals of from two to three days, the surface of the calico was lightly brushed over with a mixture of equal parts of the oil and acid. For six days, some yellowish serum, amounting at first to one or two minims in twenty-four hours, but gradually diminishing, exuded from below that part of the margin of the lac plaster where the gutta-percha film had been left, the amount being estimated by changing every day a little bit of antiseptic lint placed at the point of exudation. But, after the sixth day, the piece of lint was left unchanged, as the trifling discharge seemed to have ceased entirely. When eleven days more had passed without any change, I thought it well to ascertain again the state of the wound; and on Oct. 30th, seventeen days after the second application of the deep dressing, and two days short of four weeks after the accident, I pulled off the lac plaster with the tin adhering to it. The plaster was still sticking to the skin, and drew away the hairs along with it, except where the gutta-percha film remained. At this part, along the course of the track of exudation, the skin had an orange stain, from serum mixed with altered hæmatin, and was moist, except near the edge of the plaster. Beneath the tin, also, there was the same kind of orange moisture. The wound appeared at first sight unhealed, having an orange-red aspect; but, on wiping it with a piece of lint, a perfect cicatrix was disclosed, which had been covered with the remains of the little portion of clot seen projecting from the orifice on the former occasion of exposing it. A piece of dry lint was placed upon the scar; and the splints were

readjusted, the fragments being in good position. The case was now reduced to one of simple fracture.

This case presents several features of great interest. In the first place, the appearances disclosed on the removal of the dressings on the tenth day after the accident, afford as good an illustration as could be desired of the fact that the surface of a wound is not induced to suppurate, or indeed to undergo any appreciable change by the contact of a foreign body, destitute of chemically stimulating properties. The carbolic acid with which the surface of the tin was washed, like that injected into the wound, was absorbed into the circulation before it had time to bring about those changes in the part which are the essential preliminary to suppuration. The tissues of a recent wound are incapable of forming pus, however much they may be stimulated, whether by nervous (*i. e.*, inflammatory) excitement, or by chemical irritants, such as the products of putrefaction or pungent antiseptics. It is only when they have been gradually changed under the influence of prolonged abnormal stimulation into that rudimentary form of tissue which, when we see it on the surface of a sore, we term granulations, that they are liable to produce, when still further stimulated, the still more rudimentary pus corpuscle. It is upon this fact that the possibility of obtaining primary union on the antiseptic system depends. The antiseptic applied to the wound in the first instance is a powerful stimulant, but it is absorbed before it has time to bring about granulation in the tissues.

In the second place, it is very satisfactory to see, although theoretically it could hardly have been doubted, that, when a wound has been effectually protected from stimulation and consequent granulation, it may even at a late period after its infliction, be again subjected to the temporary stimulus of an antiseptic application without being made to suppurate; for a knowledge of this fact will enable us to examine the wound when we think there is a fair prospect of healing being complete, confident that, should the reverse prove to be the case, we can again employ the original mode of dressing without interfering with the process of healing by scabbing.

Thirdly, I may remark that cicatrisation without suppuration beneath a piece of tin, is a novel mode of healing by scabbing. But the ordinary scab is in so far analogous to the metallic plate, that the exudations of which it is composed having dried before they had time to putrefy, the crust is, like the metal, a neutral or unstimulating solid. Further, there is putrescible moisture beneath the scab as beneath the tin; but the mode in which the putrefactive organisms are excluded is essentially different. The scab keeps them out mechanically, by adhering

firmly to the surface of the integument; the metallic plate opposes no mechanical barrier to their entrance, but is guarded by a germ poison in the surrounding lac which no less imperatively forbids their access.

Altogether, the case must be regarded as affording great encouragement for giving a further trial to this method, which seems to bring the treatment of compound fracture to something nearly approaching perfection. The lac, being impermeable to discharge, combines the properties of an external antiseptic guard with those of a permanent crust; and, as fresh carbolic acid can be supplied to it as often as may be desired without disturbing its position, the trouble and risk that attended the changing of the putty are entirely got rid of. At the same time the tin protects the raw surface from the acid with absolute certainty, while the tin and the lac constitute together so thin a layer as not to alter the contour of the limb, or interfere with the shape of splints such as would be used for simple fracture; a considerable advantage as compared with the mass constituted by a thick crust, covered with substantial putty. When the wound is large, I would advise the use of two layers of the lac plaster for the sake of additional strength, the outer one overlapping the inner by an inch or two; and the outer, like the inner, rendered adhesive, as above described, so that the two may become incorporated into one mass. Also, I would recommend that, as was done in the second dressing of the last case, the film of gutta percha should be left upon a track leading from the tin to what is to be the most dependent part of the edge of the plaster to afford free egress for sero-sanguineous discharge.

For treating the interior of the wound in compound fracture, I employed, till comparatively lately, the undiluted acid, and, as this afforded excellent results, I did not venture to change the practice without having some more substantial basis than hope to found upon. But rather more than a year ago, having observed that the injection of a saturated watery solution (one part of acid to twenty parts of water) among the fibrous tissues in a fœtid suppurating wound of the palm, completely arrested the existing putrefaction, I concluded, that if the acid so diluted sufficed to destroy the abounding putrefactive organisms which must have been present among the textures in that case, it must surely be trustworthy for compound fracture. We have accordingly employed the saturated watery solution in all the numerous cases of compound fracture that have since come under my care, and in no instance has it failed. If it answers equally well, it is obviously superior to the strong acid, since it does not produce the slightest sloughing from caustic action, and, being a less powerful irritant, causes a less copious serous

effusion. Besides, it may be injected and diffused among the tissues which are the seat of extravasation with a freedom which could not be used with the acid of full strength, and it is to this circumstance that I am disposed to attribute the fact that we have obtained success at a period after the infliction of the injury which I should formerly have thought quite hopeless, in one case, for example, as late as thirty-six hours after the accident. Lastly, we avoid a disagreeable symptom which we used to observe occasionally after applying the undiluted acid freely to large wounds, viz., obstinate vomiting for about twenty-four hours, occasioned no doubt, by imbibition of a poisonous dose into the circulation.—*British Medical Journal, Nov.* 14, 1868, *p.* 515.

43.—ON THE TORSION OF ARTERIES AS A MEANS OF ARRESTING HEMORRHAGE.

By Thomas Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

[The employment of torsion for arrest of hemorrhage from large blood-vessels was suggested to Amussat by the recognised fact that torn wounds do not bleed. Although at once adopted by Boyer, Dupuytren, Majendie and others, it was little noticed by the surgeons of this country until the introduction of chloroform removed any object in hurrying over an operation. Speaking of acupressure, Mr. Bryant says :]

It has, physiologically considered, one point of weakness which has some bearing on my present subject, for the value of the practice of acupressure rests on what has hitherto been looked upon, and what still must be described, as being a temporary mechanical obstruction to arterial hemorrhage ; the permanent arrest of bleeding depending in this practice, as in others, on natural processes; now, in acupressure the permanent arrest of hemorrhage depends entirely upon the clot which forms in the vessel, for no evidence has yet been adduced to show that any change occurs in the inner tunics of the vessels which have been subjected to the pressure of an acupressure needle, such as is well known to take place after the use of the ligature, and such as also occurs after the application of torsion in large vessels. In these last two forms of practice the two inner coats are divided, and subsequently unite, the permanent arrest of hemorrhage depending materially on such a process ; in acupressure there is no evidence whatever to show that any such union takes place between the two surfaces of the vessel which are brought in contact ; as a consequence the permanent success of acupressure depends upon the coagulating power of the blood

in the occluded vessel, the needle acting as a temporary mechanical obstruction to the flow of blood during the brief period of its presence.

Physiologically, therefore, acupressure is an uncertain process, and when contrasted with the ligature and torsion stands condemned; for its success depends only upon the temporary processes which nature adopts for the purpose of arresting hemorrhage, and not upon the permanent hemostatic changes which nature employs in other cases.

When Professor Syme, therefore, in a short note published in the Lancet of January 4th, drew the attention of the profession back again to the subject of torsion, I must confess to feeling a sense of satisfaction, for it seemed tolerably clear that, if it could be practically proved that hemorrhage from a divided artery could be safely and permanently controlled by such a method, we should have a means at our disposal which would be entirely free from all the objections which the strongest objectors to the use of the ligature could possibly adduce, and which in its simplicity and value would without doubt bear favourable comparison with acupressure as well as with the ligature.

It was under these circumstances that I was thus led to examine into the question, to try it in practice, and to prove it by experiment; and I now propose to lay the results of my inquiries before the Fellows of this Society, with the hope that they will be induced to test the practice for themselves, and by the aid of experiment guage its value.

I propose to relate seriatim the experiments I have made upon the dog, horse, and human subject to test the value of torsion, and to observe the process by which the vessels so treated become permanently sealed; having previously described the two methods by which torsion has been practised.

I shall pass on to describe the physiological changes which have taken place in the arteries which have been twisted; and draw attention to such special points as it seems necessary to attend to in the application of the practice. Some brief comparison will then be made between the value of torsion and the ligature, and some general deductions drawn up from the consideration of the subject as a whole.

I must add that in most of my experiments I have had the benefit of Mr. H. Howse's able assistance; that he has given me valuable aid in examining the vessels of the animals after death, and that the descriptions of the physiological conditions of the arteries are chiefly from his pen, receiving from me only such slight alterations as I deemed necessary. I am also indebted to him for the drawing of some of preparations.

It would be well, however, *in limine*, to premise that there

are two modes of applying torsion; one described by Amussat as "free" torsion, the other as "limited."

In *free torsion* the end of the artery should be fixed by a pair of clasped forceps and twisted freely.

In *limited torsion* the artery, having been drawn out of its sheath, should be fixed *transversely* about three-quarters of an inch from its divided extremities by a pair of clasped forceps and held steadily; whilst with a second pair the free end of the vessel should be twisted freely as in the former, the object of first pair of forceps being to fix a limit to the twisting of the vessel and prevent the artery being separated for any distance from its vascular attachments."

[A long series of experiments on the arteries of the dog and the horse are next detailed by Mr. Bryant.]

Experiments upon the arteries of the dead subject.—I have made a large number of experiments on the arteries of the dead subject, healthy and diseased, having generally selected the common iliac and external iliac vessels, and have found that in all the same changes have taken place as have been already described. In every instance the retraction and incurvation of the middle and inner tunics were well marked, and in some the latter was most remarkable; it appears also that in the atheromatous vessels this incurvation is equally well seen.

Indeed this incurvation of the inner tunics of an artery, to which torsion has been applied, appears to be a point of peculiar interest, and from a large number of experiments on the dead subject it may be stated to be a very general result of well-applied torsion.

The amount of incurvation in different instances will, however, be found to vary; in some it will show itself more as an irregular crowding together of the divided and retracted tunics; whilst in others it appears as a complete valvular incurvation of the divided coats, the incurved portions appearing within the vessel as nipple-like projections; under these circumstances, the incurved portions form the most perfect valves it is possible to conceive, being not unlike the semilunar valves of the heart and closing as perfectly. In some cases, again, the middle and inner coats appear to split, and thus to form an additional means for causing coagulation of the blood and obstruction to the artery.

This incurvation is clearly a physical act, and is due to the natural elasticity of the coats of the vessels; it may consequently be confidently expected to take place in all the larger vessels.

I have found also that when a vessel has been efficiently twisted, no legitimate force that can be employed with a syringe, introduced into the vessel above, will unfold the twist in the

cellular coat, or undo the retraction and incurvation of the inner tunics, although the artery will frequently rupture above the part which has been twisted; when the extremity of the vessel has been twisted off, leakage, however, frequently follows.

It should be stated that this incurvation of the inner tunics seems unknown after the ligature; indeed it should be stated that in a large number of experiments which I have made, in which a ligature has been applied to an artery, the only change that takes place in its coats is an imperfect and irregular division of its middle and inner coats; in rare cases this division is very complete, in many others it does not take place it all.

There is never any retraction worth mentioning, and no incurvation. I may refer to Dr. Jones's work on 'Hemorrhage,' published in 1810, to further illustrate this point.

Résumé of the physiological effects of Torsion on the vessels. —The results of the experiments made upon animals, and the single observation I have had an opportunity of making on the human subject, singularly accord; for in the cardiac and distal ends of the arteries which had been treated by torsion, I found the middle and internal coats of the vessels had been divided; that these coats had retracted in the direction opposed to the blood stream, approximated and overlapped; that at the cardiac end in several instances the coats had become partially incurved, as shown in the preparations and drawings of the carotid of the horse, and the brachial of the human subject; and I found also that every vessel contained clot, from the giving off of the first branch to the point of contact of the two inner divided coats; that lymph or organizable blastema was poured out around the divided extremities of the coats, and between them and the external cellular coat; also that a second smaller clot often existed between the distal end of the two divided inner tunics, and that portion of the cellular coat which had been twisted.

I found, moreover, that the twist which the cellular coat had sustained was clearly permanent, and that it did not untwist (this can be shown on the dead body). That in no single instance was there any evidence to indicate that the portion of vessel which had been twisted had lost, or was likely to lose, its vitality; or that the parts about the vessel had received any material injury.

That in most cases a kind of ampulla tends to form in the cardiac end of the artery, and sometimes in the distal end. The appearance which this presents, varies in every case, and seems to depend on the rapidity with which coagulation takes place in the end of the artery, and upon the amount to which the artery, beyond the point where the clot forms, contracts. In those arteries, therefore, in which much muscular fibre exists, and in which it is healthy, it will be most apparent; thus it is

scarcely visible in the brachial artery from probable atheroma, and in the carotid of the first horse which was an old worn-out creature.

It is not necessary, therefore, to suppose that the force of the heart actually dilates the end of the artery. The diameter of the ampulla is in fact something less than the original cavity of the artery. Fibrin forms here first and prevents that close contraction of the parietes which goes on in other parts, and thus an apparent dilatation is formed. The middle coat in the artery is always much thinner than that in the contracted part of the artery.

Thus the appearance of an ampulla is rather due to unequal contraction than to dilatation.

That though "free torsion" was practised in every case except in the horse, yet the twist in the vessel was local, not extending high up the artery.

That torsion when applied to large vessels immediately above the giving off of a large branch may be successful; and that when applied to diseased vessels in old subjects it may be likewise succeed.

Remarks on the Experiments made on Living Animals.—It is to be noticed that in the experiments upon dogs "free torsion" was employed; in the two upon horses "limited torsion" was used. In all the operation was ultimately successful.

In several on the dog bleeding took place when the torsion had been imperfectly carried out; three revolutions of the vessel being clearly insufficient; in all, however, on the dog four revolutions at once succeeded.

But the arteries of dogs are not large, and although the experiments upon them, as far as they go, must be regarded as satisfactory, they would not be, to my mind, of sufficient value to prove the power of torsion unsupported by others of greater importance.

The experiments on the horse I cannot but refer to with unmixed satisfaction, for no one can look upon the dilated pulsating carotid artery of such an animal during life, without a feeling of astonishment that such a simple act as that of torsion should be found sufficient to arrest hemorrhage from its divided extremity; and yet in both the cases related complete success followed the operation when it had been properly performed.

The temporary failure in the second case which followed upon the imperfect application of the practice must be looked upon with favour, for it went to prove what I confidently anticipated would have been the case—that torsion of the external coat when too much concentrated to one spot must end in its rupture, and consequently in failure: but the ultimate success

of the torsion when carried out in an efficient manner was most satisfactory, for it tended to show that the means employed were such as could be relied on with some confidence.

The fact that torsion was successfully performed on the carotid of a horse, immediately above the giving off of a large branch is a point of great value, for if the permanent safety of torsion depended upon the mere coagulation of the blood in the vessel, success could not have been thus acquired—for as the drawing, model, and preparation well show, there was no room for such an obstruction to the arterial flow to take place between the twist in the cellular coat, and the point at which the branch artery was given off.

It would thus appear that the twist in the cellular coat was the chief cause of the arrest of the arterial hemorrhage in the experiment referred to, and that this twist with the adhesion of the split, *retracted*, and approximated middle tunic forms the true permanent occluding medium of a divided vessel; that upon such points the main safety of the practice of torsion really rests, the coagulation of the blood in the vessel acting a part of secondary importance.

As mere experiments, these operations on the horse must be looked upon with favour; for they prove practically that torsion of such a large artery as the carotid is to be relied on; and consequently it does not appear unfair to believe that the same practice applied to any smaller vessel would be equally successful. As physiological experiments, however, the observations I have been enabled to make must be regarded in a higher light, for they show that nature's well-known hæmostatic processes act at a far greater advantage when torsion has been applied, than they do after the use of the ligature; and, what is of far greater importance, they are allowed to go on undisturbed in their conservative action, for there is no foreign body to set up ulcerative action in the vessel in the seat of its occlusion; nothing to undo at a late period of the case what nature, assisted by art, has done at the beginning for the prevention of arterial hemorrhage. The twist in the vessel remains permanent; the coagulation of the blood in the meshes of the retracted, approximated, and incurved middle coat goes on undisturbed; and the whole becomes, subsequently, rapidly condensed into one homogeneous mass by the effusion of lymph from the exposed surfaces of the divided tunics.

In the application of torsion some care is needed, and as two methods have been described, the "free" and the "limited," it may be well to point out as far as possible the conditions under which they should be employed.

"Free" torsion appears to be the more applicable to small vessels, and even to the large trunks of the extremities; the

"limited" torsion to such arteries as are unsupported by muscles and loosely connected.

It will have been observed that in all my experiments upon dogs, in which both carotid and femoral arteries were treated by torsion, the "free method" was used; and in the single example I have quoted in which I adopted the practice in a large vessel on the human subject—amputation of the arm high up—free torsion was also employed; for in that case I passed one blade of my forceps into the humeral vessel for about half an inch, and, with the other outside, after four complete revolutions the operation was successfully performed. I have, since this paper was written, applied free torsion to the femoral artery of three adult patients with complete success. On the dead subject also this mode of torsion proves successful, particularly on the femoral, brachial, and carotid arteries. It should also be stated that Amussat in his last years employed the *limited* torsion in all except the very small vessels; whilst Thierry employed the *free* in every case.

Three or four revolutions of the artery are required for small arteries, five or six for large: when the vessels are atheromatous the former number (three or four) is amply sufficient under all circumstances.

The orifice of the artery alone should be held by the forceps which twist the vessels in both cases.

In no case does it appear necessary, or even prudent, to twist the vessel till the end is twisted off: for by so doing we do away with the chief safeguard against bleeding, we run the risk of breaking up the valvular incurvation of the inner tunics, and disturb the clot which forms betwen the retracted ends of the two inner tunics and the twisted cellular coat. In very small vessels this point is not of so much importance. It is probably due to this error of twisting off the ends of the vessels, that the practice of torsion has failed to hold its ground, for in the few cases in which it has been employed, such a mode has been generally, if not universally, adopted.

It seems to be a good rule in every case of torsion, whether free or limited, to hold the end of the vessel for a second or two after the twists have been made, to allow of the parts becoming plugged with blood, and the divided tunics to retract and come in contact.

It appears also to be a matter of great importance in twisting large vessels that the whole orifice of the artery should be seized and firmly held; this cannot be well done with the forceps ordinarily sold, but can be by the forceps I have had made for the purpose by Mr. Millikin of Southwark street, the ends of which are broad, and firmly hold the artery, and not having sharp ends do not tear it. The blades are closed by a simple catch.

With a small pair of forceps the surgeon is very apt to tear out a piece of the end of the vessel and not twist it securely. I have proved this on many occasions on the dead body.

The forceps I have had made for holding the vessel are very simple, they fix it firmly with flat surfaces without injuring the external coat, which the sharply-teethed forceps are apt to do; they are also very well adapted for the twisting of vessels of moderate calibre.

By way of summary the following conclusions may be drawn up.—1. That hemorrhage may be arrested by torsion from even the largest vessels.

2. That it is a safe and judicious practice in all cases in which the vessels are small and of moderate calibre; and that, as far as experiments and practice yet prove, it is equally so in arteries of the first magnitude.

3. That torsion may be "free" or "limited;" the *free* method being applicable to vessels of moderate size, and even to the largest of the extremities; *limited* torsion being more adapted for the large and loosely connected vessels.

4. That in *torsion* as in the *ligature* the permanent hemostatic processes are alike due to the sealing of the divided inner and middle tunics; but that in the ligature there is only an irregular division of these tunics, whilst in torsion there is a complete division, separation, retraction, and valvular incurvation.

5. That in torsion the *twisted cellular* coat forms, with the retracted and incurved middle coat, the direct mechanical obstacle to the flow of arterial blood, in the same way as the *compressed cellular* coat does in the ligature; but that in torsion the twisted cellular coat and incurved middle coat become subsequently a permanent means of occluding the end of the artery; whilst the ligature of necessity becomes subsequently a source of irritation, and too often a means of undoing what has been done by nature's own hemostatic processes.

6. That in *torsion* the twist in the cellular coat of an artery; the division and subsequent retraction, incurvation, and adhesion of the middle coat; and the coagulation of the blood in the vessel down to the first branch, are the three points upon which its temporary as well as permanent safety depends; whilst the permanent safety of *acupressure* rests only upon the last point alone, and its temporary effects upon the pressure produced by the needle.

7. That there is every reason to believe that when torsion has been successful on its first application, the fear of subsequent hemorrhage is altogether groundless; for there is nothing, as there is in the ligature, to interfere with the physiological processes set up by nature to occlude the divided vessel; and, unlike

acupressure, the temporary obstacle to the flow of blood becomes a permanent one.

8. That upon physiological grounds torsion has decided advantages over the ligature and the acupressure needle; and that if subsequent experience confirms what has been hitherto observed in the experiments on animals and the application of the practice in the human subject, we shall have gained a point of no mean importance and simplified surgery in no slight degree.—*Medico-Chirurgical Transactions, Vol.* 51, 1868, *p.* 199.

44.—ON ACUPRESSURE AND TORSION.

By J. Cooper Forster, Esq., Assistant-Surgeon to Guy's Hospital.

In many cases, torsion has a great advantage over acupressure, but it is not always easy of application; nay, in some instances it is applied with great difficulty, and should a portion of the vessel perchance be torn off and hemorrhage still go on, the further practice of torsion becomes exceedingly troublesome. It is impossible to say why the practice, adopted first by Amussat, was given up by the French surgeons—perhaps the difficulty of its application without chloroform may have been one reason, but I can scarcely imagine such to have been the case. In the few instances where I have used it there has not been any trouble in applying it, and certainly nothing that would induce me to abandon the practice on any such grounds.

The great recommendation for the employment of acupressure has been generally asserted to be that thereby adhesion—entire or almost entire—of the whole of the wound would more frequently occur than at present, but on reviewing the cases which have fallen under my notice, in no one instance has there been an entire absence of suppuration, with such complete adhesion as I had been led to expect and hope for. I must confess here to a certain amount of disappointment. I hear it also stated by the warmest advocate of acupressure that torsion leaves a small piece of sloughy tissue in the wound which acts injuriously by preventing the entire adhesion of the surfaces. Supposing there to be truth in this statement, we are no worse off if we get no more adhesion by acupressure than by torsion, and surely out of forty cases one or two at least might have afforded me a happy result. One of the undoubted advantages of torsion is the absence of a foreign body of any description in the wound. It is even simpler than the use of pins for twenty-four or forty-eight hours, and if it answers equally well I think it should be employed. But there are cases where I think the use of both means for arresting bleeding may be advantageous; the combined plan in

the patient upon whom I adopted this double treatment for the arrest of hemorrhage was more successful than torsion alone—indeed, there seems to be a greater trouble in applying torsion to the smaller vessels than to the larger ones.

Professor Syme and Dr. Humphry have now brought forward so many cases in which they have employed torsion that no one can believe for a moment that there need be the slightest fear of trusting a large artery thus treated; and from what I have done in the few cases mentioned, I believe it bids fair to realise the hope I expressed at the termination of my last communication, that some plan even more convenient than the pin and wire might be found as a substitute for them: such at present appears to be the result of torsion.

Experiments on animals are of little avail in establishing the security of the torsed vessels—the French surgeons made enough of these trials many years ago to satisfy any one, and with the happiest results; yet the practice of torsion was abandoned by them because (so far as I can gather) suppuration occurred in the human subject along the course of the arteries.

I have not yet heard of any such result following the practice at the present day. The time occupied in the performance of torsion is somewhat longer than that in applying the pin and wire, and in the smaller vessels there is, no doubt, considerable trouble sometimes experienced in applying torsion, and it may be advisable to have a pin and needle at hand so as to combine the two plans, as in the vessels of small size the pins can always be removed in twenty-four hours or less.

I have no hesitation in saying that two of the cases which have occurred this year have given me considerable anxiety as regards acupressure—one of them more especially, as the pin was kept in seventy-two hours with a view of preventing any hemorrhage, and yet on its withdrawal so feeble was its hold that a sudden gush of blood took place. I should mention that the whole stump had sloughed, and whether the same result might have occurred with torsion (it most probably would eventually have done so with a ligature) I cannot say; probably any means would have failed, but as acupressure was under trial I was disappointed at its failure.

Some length of time must necessarily elapse before surgeons will be inclined to expose their patients to what, in the minds of many is considered a hazardous condition; there is a certain sense of security given in the case of a ligature being applied which affords to the surgeon a guarantee that for the present at least he will leave his patient in a safe state; but he forgets that there is a danger of hemorrhage arising when that ligature is separating, probably as great as on the removal of the pin. Amussat described the inner coat of the vessel as being folded

up, and this condition would appear to act as a preventive of bleeding equally secure with the plan of tying a ligature around the artery, and certainly more secure than acupressure.

During the last two years I have in no case used a ligature where any attempt has been made to obtain adhesion in a wound, nor where I have been able to practice torsion. It is thus difficult to see in what cases ligatures need be used at all.—*Guy's Hospital Reports*, *Vol.* 14, 1868, *p.* 172.

45.—ON THE PROCESS OF TWISTING ARTERIES FOR ARREST OF HEMORRHAGE.

By Dr. James D. Gillespie, Surgeon to the Royal Infirmary, Edinburgh.

Though it has of late been brought very prominently into notice, there is nothing new in this method. It has long been known, and occasionally practised.

Amussat was a strenuous advocate in its favour, recommending and practising its employment even in large arteries. The idea appears to have been suggested by what has been observed in cases of forcible avulsion of a limb, it being notorious that, as a rule, under such circumstances the arteries do not bleed; and when examined, they have been found with the internal coats curled up and torn, while the external was twisted over them, and drawn out to a point.

It is easy to understand how the suggestion arose,—Why not imitate nature when you are artificially removing a limb? And accordingly twisting an artery of small or even medium size has been repeatedly put into successful practice. Certain little accessories are, however, essential to obtain satisfactory results.

The point of the artery must alone be seized, and it must be slowly twisted till the portion included in the forceps comes away. If this is not done, and as I have repeatedly seen, the teeth of the forceps, after twisting for a little, are unclasped, the artery is sure to unroll itself again and bleed more fiercely than ever.

I have given this method of arresting hemorrhage a fair and an ample trial, having, as well as my colleague, Professor Syme, trusted to twisting alone for occlusion of the femoral after amputation, and with entire success. I would not, however, in the present state of our knowledge, advise you to adopt twisting for the largest class of blood-vessels, for I believe that their vital powers are often impaired by disease; and besides, we know that arteries do not always, though generally, when forcibly torn across or twisted, become safely closed orifices;

reaction may burst the barrier, and produce serious if not fatal hemorrhage. For the smaller vessels there is nothing better, for neither the slough of the artery nor the pus-absorbing ligature is left in the wound, nor is the patient put to the pain—for he almost invariably expresses much pain at such a time—of having a lot of needles pulled through a sensitive cut and resisting surface, when it is necessary to have them removed.

Its only failing is, that in extensively diseased parts the artery sometimes breaks instead of twisting, or in some situations the vessel retracts beneath a band of fascia, and all attempts to isolate and twist its orifice may be found ineffectual.—*Edinburgh Medical Journal, Jan.* 7, 1869, *p.* 583.

46.—ON TORSION OF ARTERIES.

By Dr. G. M. Humphry, F.R.S., Professor of Anatomy, and Surgeon to Addenbrooke's Hospital, Cambridge.

For several months I have used torsion exclusively, with one or two exceptions, after all operations in hospital and private practice. The operations have included three amputations in the thigh, in each of which I twisted the femoral as well as the other arteries; amputations in the leg and forearm, and of the breast; removal of tumours; excision of the knee, &c.; and it has answered perfectly well. The wounds were closed immediately by suture, and there was no after hemorrhage in any of the cases.

I do not mean to say that torsion is quite so easily or quickly done as is the application of the ligature. It requires more care and, I think, rather more time. In tying an artery, it is not absolutely necessary for the orifice of the vessel to be included in the grip of the forceps; it is sufficient if it is included in, and the mass tied by, the ligature. But for successful torsion, the artery itself must be held between the blades of the forceps; and it is not always easy to be sure that this is the case. It may not be seized at all; or it may slip on one side as the blades of the forceps are closing. Accordingly, I have often found that the twisting has failed; and I have made, not unfrequently, two or three false attempts, so prolonging, of course, the operation. Still I have always persevered, and have succeeded at last in every instance; and I have never yet known an artery bleed in the human subject after I could be sure that it had been really twisted. Again, the artery should be held in the forceps in, or nearly in, the direction of its axis: the rotation of the forceps in that axis being necessary to secure proper torsion. If it be seized across its length, as not unfrequently happens unless care

be taken to avoid this, it is simply turned upon the rotating blades, and torn across, instead of being twisted.

In accordance with the observations made on the dead body, and recited above, I have simply seized the end of the artery with the forceps, not drawing it out or holding it with a second pair of forceps applied higher up; and have rotated the forceps till they were free, the piece of the vessel included in them being twisted quite off. This may require ten or a dozen rotations of the forceps; and I am careful to go on twisting till the severance is quite complete, not allowing myself to withdraw the forceps till every thread is divided by the twisting, being fearful lest the pulling upon any undivided portion of the outer coat should tear it, or prevent or disturb that complete twist which my experiments have shown to be so important. Lastly, I examine the twisted end well, to ascertain whether there is any leakage.

One advantage of torsion is, that we need not hesitate to apply it to every vessel which bleeds, or which seems likely to bleed after the wound is closed. We are unwilling to leave thirty or forty ligatures in a wound; but we may twist that number of vessels without any compunction, and thus diminish the oozing which sometimes takes place after the closure of the wound, and, by separating its surfaces, prevents their union. This occupies a little more time, which, under chloroform, is of no great consequence; and it may prevent much subsequent trouble, or even danger.

I have observed that the pain suffered after the operation has been less than when ligatures were used.

To form a correct estimate of the effect of torsion, as compared with ligature, upon the healing of the wound, will require more extended experience. My own observation is, thus far, certainly in its favour. Some of the wounds, in which several vessels were twisted, have healed quite up at once without a drop of pus, which could not have taken place if ligatures had been used. In the last amputation in the thigh, the patient being a man aged 50, the wound healed by first intention, with the exception of a small track at one part, which soon closed. In two of the amputations in the leg, sloughing occurred from causes quite independent of the torsion; and there was no secondary hemorrhage. In such cases as excision of the knee torsion promises to be especially valuable, enabling us to secure, without the presence of a foreign body, any small vessels that may bleed or be likely to bleed. I have used it in two cases of excision of the knee, and in both the wound healed up at once.

I think, therefore, that, in amputations and other operations, all vessels short of the size of the femoral artery, as a general

rule, may and should be secured by torsion; that the healing of the wounds will be thereby expedited; and that in the greater number of operations, the ligature may with advantage be superseded by torsion.

The femoral artery may also be twisted with success. It was so in the three instances that I have tried; but it must be admitted that my experiments throw a doubt over the applicability of torsion to arteries of large size.—*Brit. Medical Journal, Jan. 9, 1869, p. 25.*

47.—THE USE OF COMPRESSION IN CERTAIN SURGICAL CASES.

By Dr. C. H. Higgins, formerly Surgeon Somerset County and Birkenhead Hospitals.

[Any remedy for "sprains" is welcome, if reasonably likely to succeed, for who has not often experienced disappointment in their lingering cure.]

The plan then which I have pursued during the last four or five years in all cases of sprain is as follows:—immediately on seeing the patient, and satisfying myself of the nature of his accident, I plunge the injured joint, say the ankle or the wrist, which are the parts most exposed to sprain, into a vessel containing water as hot as can be borne, and keep it there for at least two hours, maintaining the temperature of the water by fresh quantities of the hot. At the end of the time specified, I find the pain of the part considerably mitigated, and it is, of course, very greatly distended and swollen. Having next carefully dried the part, I proceed *at once* to strap it, (if the ankle, from the toes to the middle of the calf, and if the wrist, from the fingers to the middle of the fore-arm,) as *tightly* and *equally* as I can, with common adhesive plaster cut into strips an inch wide, placing each succeeding piece so as to overlap the preceding one by about a quarter of its width. I always put on two such layers, and finally I direct the patient to keep the horizontal position, on no consideration to meddle with the dressing, but if much pain or distress is set up to take an opiate on retiring to rest. Upon visiting my patient on the following day, I usually receive some account of a restless night during the first hours, but subsequently of sleep and diminution of pain, &c. The plasters are generally quite loose from the shrinking of the limb, which is moreover now said to be comparatively free from pain, unless handled roughly—though of necessity much discoloured; having removed the plaster, I immediately replace it by fresh strips laid on as firmly, evenly, and extensively as before; in short, exactly in the same way as on the first dressing, insist-

ing of course on a continuance of the recumbent position. On the third day of the accident I repeat the process, this time, however, allowing two days to intervene, and I permit some movement about the room. At the end of the two days, I renew the plaster-dressing exactly as on the previous occasions, and generally for the last time, retaining this dressing until it loosens itself off, which usually occurs in three or four days, by which time I find the patient able to use his limb, and free from pain; in short, cured. Such is my proceeding in ordinary cases of sprain; where the accident is of unusual severity, I have had recourse to *six* relays of plaster instead of *four*, and up to the present time with equal success, though the cure is generally delayed three or four days or so longer.

The first case I treated on the above plan was that of a former student of the Liverpool Medical School, residing at the time on this side of the river, and at present a Surgeon in the army. This gentlemen took it into his head to leap down the last four or five steps of a common flight of stairs with an adult sister in his arms. He fell with his right foot doubled under him, and suffered a most severe sprain of his ankle. I saw him shortly after the accident and found him in intense agony, &c., and quite unable to move his foot, which was already much swollen. Not having perfect confidence in my plan of strapping, I immediately applied a full number of leeches, and then had his limb well fomented and ultimately enveloped in a bran poultice, and enjoined complete rest in bed. The following morning I repeated the leeches and fomentation, as there were still considerable pain and distension. On the subsequent day, I timidly commenced the plan of compression, using for the purpose a common firm calico bandage, which I applied firmly. As he expressed relief from the support, I rigidly continued the compression, removing and re-adjusting the bandage as the swelling diminished. Three weeks from the date of the accident, he was able to draw on an ordinary Wellington boot and go out shooting; and in a couple of weeks more he reported himself as quite recovered, and resumed his studies.

The next case I was called to was that of a lady, about 45 years of age. She slipped down the kitchen stairs, sustaining a sprained ankle. I saw her three or four hours after the fall, and found her ankle swollen and intensely painful. I caused her to foment the limb for a couple of hours. At the end of that time, having reasoned myself into more confidence of the method, I tightly strapped the foot and ankle, from the toes to the middle of the leg, with strips of ordinary adhesive plaster. She bore the strapping for some hours, but at length, becoming impatient of the distress occasioned by the dressing as she supposed, before my visit on the following day, she had loosened

and to a great extent removed it. I re-adjusted the strapping; and on the next day, finding she had again loosened it, I applied, in place of common adhesive plaster, emplastrum roborans, spread on linen and cut into strips like the former. Seeing me so determined, and not finding it quite so easy to remove the new strapping, she had not meddled with it; and after two or three days more, perceiving that the swelling had greatly diminished and the plaster consequently loose, I applied fresh strips as firmly as I could. The parts were by this time much less painful, and reduced, and my patient, being now convinced of the advantage of the compression, contentedly submitted to two or three renewals of the plastering, and in a month from the accident she was quite recovered, and able to walk about well.

Another case was that of a young gentleman, about 20 years old, who severely sprained his ankle in leaping from the landing-stage on to one of the Woodside boats. He was brought home, not being able to put his foot to the ground, and I saw him three or four hours afterwards. He complained of great pain, and his foot and ankle were much swollen and discoloured. I had his foot placed for a couple of hours in a bucket of water as hot as he could bear it, and then tightly and evenly strapped the limb in the way already described, from the toes to the middle of the calf, and enjoined the recumbent position; the next morning he reported a somewhat restless night and some distress from the plaster, which, as usually happens, I found loose, from the shrinking of the parts. I restrapped the limb tightly, and he expressed himself easier when the operation was finished. Two days afterwards I applied fresh plaster, and again in two days, as the limb had now nearly returned to its usual size; this was the last application of plaster, for he could now walk tolerably about the room. At the end of ten days I saw him dancing at a party, and in one fortnight from the date of his accident he returned to his office duties, perfectly recovered.

The next opportunity I had of testing my method of treatment was in the case of an officer in one of the Inman line of steamers, who had a fortnight before sprained his ankle by slipping on the ice at Halifax, *i. e.*, the day before he sailed for Liverpool. He was entirely laid up during the voyage, and when he reached home was quite lame, and suffering from pain in the ankle joint. I pursued the plan I have already so fully detailed in the former cases. He underwent four strappings, and at the end of one week, though still wearing the last dressing, he was able to walk about without pain or limping.

Lately, one of my sons in leaping a gate fell, and sustained a most severe sprain. I pursued precisely the same plan as in

the other cases, and though he suffered some considerable discomfort from the first application of plaster, he recovered without a drawback, and in less than a fortnight, though much discolouration continued almost up to the knee, he was able to resume his office duties, which entail on him a great deal of walking, without pain, &c.

A short time ago I had the opportunity of testing my plan upon myself, and, what is more, of contrasting it with the treatment I was subjected to for a similar accident some years previously. I was returning home some months since, late at night, from a patient's house, and stumbled over a large stone carelessly left in the road, and met with a severe sprain of the left wrist-joint. My hand was quite powerless, and extremely painful. I caused straps of plaster, in the usual way, to be tightly applied, from the base of the phalanges to about four inches above the wrist. These were renewed three times, and in five or six days I was free from uneasiness, and could use my hand almost as well as ever, and in a couple of days or so more had quite recovered, and have never felt inconvenience since.

From this accident to myself, I need scarcely say, I had an opportunity of measuring the amount and sort of discomfort occasioned by the first application of the strapping. This I found to extend over only the first six or eight hours, and, though certainly sufficiently distressing, it was by no means so great as I had anticipated, and consequently quite worth undergoing to ensure the after benefits of the treatment, and indeed quite compensated by the sense of security and support it produces, the absolute immobility in short, of the injured structures.

I have lately had an opportunity of proving to some extent the efficacy of compression, by the method I have described, in two or three cases of contusion, also in one case of dislocation of the elbow joint, in a member of my own family; and I may add also in two cases of gout in the foot. Here I delayed the application of the plaster strips until all inflammatory appearances had subsided. The benefit of the compression in both instances was considerable, not only from the support it afforded, but also by inducing absorption of the insterstitial deposits.

When we reflect upon the nature of a sprain,—that it is indeed a kind of subluxation, a more or less partial and temporary displacement, as it were, of all the structures about a joint, accompanied by considerable stretching, and even laceration of its ligaments, its tendons, its fasciæ, its vessels, and its nerves,—I think we shall be safe in acknowledging that a judicious system of compresssion, early employed, must be a more efficacious method of treatment for its cure than the old tempo-

rising plan of leeches, cold lotions, stimulating liniments, &c., &c., with ultimate timid bandaging.

By compression, employed in the manner I have endeavoured to point out, I do believe we can bring about, more surely and more quickly and more comfortably to the patient, the various desiderata in the cure of sprains and similar cases. In the first place, we may ensure the complete, the absolute immobility and repose of all the injured structures. In the next place, we are enabled to restrain the greater amount of the extravasation and effusion which will of necessity be poured out, in and around the joint, unless prevented. And we may also promote at once the re-absorption of all insterstitial outpourings, be they of blood or of serum, which so frequently complicate the recovery in such cases, and compromise the symmetry of the parts, and we can restrain within due bounds the tension and vascular action of the parts. And lastly, I am sure now, from experience in my own person, that we shall conduce to the ultimate and not long-delayed relief of the parts involved, and therefore to the general comfort of the patient.

Whatever may be worth of my explanation of the *modus operandi* of compression, as I have recommended it, in sprains and contusions and all analogous cases, I can unhesitatingly vouch for the superior efficacy of this plan of treatment. And if I succeed in merely drawing attention to my suggestion, I shall be satisfied, and shall feel at least *non ego frustra*.—*Liverpool Medical and Surgical Reports, Oct.* 18, 1868, *p.* 97.

48.—AN ARTERY COMPRESSOR SUGGESTED FOR THE TREATMENT OF SOME SURGICAL ANEURISMS.

By George H. Porter, Esq., President of the Royal College of Surgeons in Ireland.

Independent of the ligature, various attempts have been made to arrest the current of blood through exposed arteries, and to occlude them rapidly, or by degrees. Most ingenious appliances have been devised for the purpose, but they have never met with much favour at the hands of practical surgeons. Yet how painful it is to meet with cases of aneurism in situations where the experience of bold and able men tells that little can be done to save life. Among those who have endeavoured to close arteries without cutting through their coats may be mentioned Crampton, Percy, Deschamps, L'Estrange, Assalini, Dubois. If, however, their instruments be scrutinized, I think it will be found that the disturbance to the vessel both in applying and removing them was too great, and the amount of pressure far beyond that required. In some situations the

ligature has invariably failed, secondary hemorrhage following its separation. To meet such difficulties is my object. That the axillary artery could be compressed between a silver probe and loop of wire for *fifty-two hours* without damaging the vessel, I perfectly satisfied myself. I reported the case in the number of this Journal for November, 1867. In the instance I refer to the artery was not occluded, but considerably narrowed at the point of acupressure. No laceration of either the internal or middle coat took place, nor do I believe such a condition requisite to close a vessel.

Strongly impressed with such an idea, I consider a modification of acupressure may yet be brought to aid the practical surgeon in the cure of aneurisms hitherto unmanageable. The little instrument I venture to suggest to the profession is in reality a form of acupressure, simple in construction, easy of application, and yet powerful in restraining the current of blood, without rudely inflicting injury on the arterial coats. It consists of a piece of silver wire about the strength of an ordinary probe; this is bent into a triangular shape about four inches in length, and the apex surmounted by a small ring; the base is perforated by two little apertures just large enough to permit a fine wire to pass easily through. The wire is first carried round the denuded artery in an aneurism needle with greater facility than a thick ligature, and each extremity of it passed through the holes in the compressor; one end should be fastened by twisting it through the little ring at the top, and the compressor may then be gently pushed down on the vessel, when, by pulling the free end of the wire, the requisite pressure may be made to arrest the flow of blood through the artery. The woodcut gives an accurate representation of the compressor, and the manner in which the wire is passed through, forming the loop which, with the instrument, incloses the vessel in such a manner that slipping is

impossible. When the artery is sufficiently occluded to stop the current, the free wire may be fastened also to the ring. The instrument can be removed with the greatest facility when pressure is no longer required, by cutting the wire at each side, lifting up the compressor, and then gently pulling the wire away from beneath the artery. I have placed this instrument on the femoral artery in the dead subject, and it closed the vessel so tightly that it prevented the injection of water through the artery, and the internal coat was not in the slightest degree injured. I have not had an opportunity of testing it in the living, but I suggest it to the notice of my professional brethren, hoping that they may be induced to give it a trial. We know that aneurisms have become consolidated, and cured in a few hours after shutting off the supply of blood to the sac, and should such a happy result follow the use of this instrument, it might at once be removed without having done any injury to the vessel; or if, on the other hand, it had been permitted to remain for fifty or sixty hours without curing the aneurism, it might be taken away, no harm having been done by its presence. It is so light in construction that no inconvenience is likely to be produced whilst in the wound leading to the denuded artery. Its action imitates, as nearly as possible, acupressure, which we know *efficiently* closes the cut extremities of large arteries.—*Dublin Quarterly Journal, Feb.* 1869, *p.* 8.

49.—TEALE'S MODE OF AMPUTATION.

[Mr. Wharton, of Dublin, in a short article published in the British Medical Journal, of October 31, 1868, proposes to modify Teale's amputation, by dispensing with the short posterior flap. In answer to this Mr. Pridgin Teale writes:]

The reason why my father considered the short posterior flap to be necessary was this; that the posterior flap, being made as a rule of the powerful flexor muscles, retracts immediately almost to the point at which the bone is to be sawn through. If, however, the posterior tissues be divided opposite the point selected for sawing through the bone, they immediately retract to a point higher up, and thus leave the posterior surface of the bone projecting and denuded of soft tissues.

This fact would not be evident in practising the operation on the dead subject, in which the flaps, from non-retractility, appear superabundant.—*British Med. Journal, Nov.* 7, 1868, *p.* 509.

50.—ON AMPUTATION OF THE JOINTS.

By Bernard E. Brodhurst, Esq., Lecturer on Orthopœdic Surgery at St. George's Hospital.

Anchylosis is either true or false. True anchylosis, or synostosis, implies that the soft structures of the joint have been destroyed, and that bony union has taken place between the adjacent bony surfaces; and by false anchylosis is understood the formation of membranous or fibrous adhesions within or external to a joint, and which interfere with motion.

False, partial, or fibrous anchylosis is induced, then, by the deposition of lymph within or around a joint, through which adhesions are formed which interfere with motion. Motion may be only slightly impeded, or it may be, in fact, lost. If the muscles about a joint, or the tendons which pass over the joint, can be rendered prominent or tense, anchylosis is not complete; neither is it complete, or bony, should the slightest motion remain. And even though motion be lost, the same sensation of solidity is not imparted to the hand on grasping the limb firmly above and below the articulation, as when bony anchylosis has taken place.

Fibrous or false anchylosis may be divided into two classes, which may be severally designated extra-capsular and intra-capsular.

Extra-capsular anchylosis depends on inflammatory action, such as is induced by burns, phlegmonous erysipelas, mechanical injuries, and indeed every form of inflammation through which lymph is deposited around a joint; while intra-capsular anchylosis is occasioned by various forms of inflammation which have affected the structures within the joint, and through which adhesions have been formed.

Thus, the fibrinous deposit, whether within the joint or external to the capsule, becoming organised, occasions false anchylosis.

Lymph is poured out into the cellular tissue around a joint, and about the sheaths of the tendons and muscles in the immediate vicinity; it becomes organised, and the parts are more or less matted together and fixed, whether in an extended or a flexed position, and their functions are impaired. And when the interior of the joint is affected, instead of that portion of the limb external to the capsule, then, in a somewhat similar manner, adhesions are formed between opposed surfaces, the inflammatory product becomes organised, and motion is hindered. Both in intra- and in extra-capsular inflammation the amount of injury to the limb will depend in some measure on the character of the inflammation. It will depend much more, however, on the mode in which that inflammation has been

treated; whether attentively from the commencement, with absolute rest, or negligently—allowing the use of the joint. And in proportion as the inflammation is of long duration, so in all probability will the adhesions which form be dense and extensive. When, however, disease is arrested, and the interior of the joint is restored to a healthy condition, the adhesions which have formed may be so dealt with that motion may be restored. In many cases the adhesions are slender, and although slender they may entirely prevent useful motion; or, again, they may be more extensive, and yet yield and allow of increased motion. When the articular surfaces occupy their normal positions, and the interior of the joint is restored to its integrity, motion may be restored. It is a notion now for ever banished, that partial anchylosis has yet to be endured, and that surgical art can offer no remedy.

In many cases of partial anchylosis there is, also, partial displacement of the articular surfaces. Some of these admit of rectification of the position of the limb; in the majority of instances, however, this amelioration can only be partially accomplished, and it cannot always be maintained even after tenotomy. It need not be said that there is no hope of restoring motion, in a permanent manner, unless the position of the limb as regards the articular surfaces is first restored.

The *treatment of partial anchylosis* may be divided into—1st, gradual extension with or without tenotomy; and 2nd, forcible flexion of the limb, with or without tenotomy, and subsequent gradual extension.

In all cases of partial anchylosis there exists some muscular rigidity; in some also, cicatrices are found, resulting from loss of substance. In cases where the adhesions are recent, contraction of a limb will probably yield to continued extension—such extension, namely, as is made by means of a well-adjusted instrument for the purpose; but, except in cases of recent adhesions, it is generally necessary to commence the treatment by dividing the tendons of rigid muscles, and by dividing, subcutaneously, cicatrices. It is better to proceed at once to these subcutaneous sections rather than to prolong the treatment by extension unnecessarily; for, except when the adhesions are recent, simple extension is seldom so efficacious as when it is combined with subcutaneous sections. Even partial displacement of the articular surfaces is easily produced by continued extension without tenotomy. Indeed, this is not unfrequently seen to result at the knee when extension is long continued with rigid muscles. And, therefore, whenever it is desired to remove the contraction of a limb by extension, it is the rule first to divide the tendons of rigid muscles, and to divide cicatrices subcutaneously, and subsequently to proceed gradually to extend the limb.

But if such be the law of treatment where the articular surfaces occupy their normal positions, it is even more to be insisted on when any displacement has taken place. Extension should then without fail be preceded by the subcutaneous section of such tendons, fasciæ, and cicatrices as might interfere with the readjustment of the articular surfaces.

These obstacles to extension then having been removed, a well-adapted instrument is to be applied to the limb, and extension is to be made slowly. The instrument should support the limb efficiently; and it should always, in the first instance, be applied to the limb at the same angle at which the limb was held before the subcutaneous sections were made. So soon then as the punctures have healed, extension may commence, and be continued without pain and without producing displacement.

Numberless cases, however, exist in which the means above-mentioned are useless to restore to the limb either the normal position of its parts or to restore motion; cases, for instance, in which the adhesions are so firm that they do not yield to gradual extension; sloughs may be caused, and dislocations, partial or complete, may be produced; but the adhesions, whether intra- or extra-capsular, remain firm and unyielding. Injury alone, but no useful result, can accrue from gradual extension in these cases. Before chloroform was introduced, these were among the *opprobria* of surgery. Then, and indeed later, gradual extension of such limbs was continued for months without any advantage being derived; and the same system has been applied even where bony union rendered any benefit impossible.

Thus it is necessary, before proceeding to the treatment of a case of this kind, to form a correct diagnosis—to determine whether complete anchylosis has taken place, or whether the adhesions are fibrous; and if fibrous, whether they will yield to gradual extension or not. If these several points cannot be otherwise determined, chloroform should be fully administered, so that when muscular relaxation has been obtained, both the character of the adhesions and the amount of motion may be ascertained. When bony union has taken place, a sense of solidity and continuity of structure is communicated to the hands on grasping the limb above and below the articulation; but when fibrous union has formed, there is always more or less motion to be obtained. And if the adhesions are of such a character—so firm and unyielding, allowing of only slight motion, and with inconsiderable muscular retraction—that the normal position of the limb can only be gained by the forcible rupture of the adhesions, the force should be so applied that it is used mainly, if not entirely, in flexion of the limb.

Any tendons which are rigid should be first divided, and the punctures having healed, and chloroform having been fully

administered, the limb to be operated on should be so firmly fixed that all motion is prevented, except that which the operator is about to impart to the limb. Thus, for instance, if the hip-joint is to be operated on, the pelvis must be fixed; if the knee, the thigh must be securely held; and so on. When the limbs are thus firmly secured, the adhesions are to be instantaneously ruptured, by force applied in the direction of flexion. I say that the adhesions are instantaneously ruptured, when the patient is properly prepared, and the force is rightly adjusted. The limb is then to be bandaged, and the joint is to be confined either in a gutta-percha splint or in a flexible splint.

I know of no danger whatever from the use of force so applied. Indeed, when the influence of the muscles is perfectly removed, the adhesions themselves usually offer very little resistance; and if the power to be applied is sufficient for the purpose, the result is instantaneous. In a small number of instances, the hand alone is insufficient to rupture the adhesions readily; in these I make use of an instrument of great power to flex the limb. Not only is there no danger connected with this operation, but with moderate care it would seem to be impossible to set up unhealthy action. There are timid people who would persuade you that in these operations fracture is not uncommon; that inflammation is frequently excited; and they will proceed to detail a list of ills, with which I will not trouble you. Let it be sufficient for me to say that I have never seen a fracture produced, nor have I known inflammation to occur, nor any other ill whatever to follow an operation of this nature; and that when disaster ensues it is from abuse of the operation. I cannot tell what might be the result of adopting such instructions as the following, which I copy from one of the latest works on the subject. After describing the preliminaries of the operation, the author proceeds thus: "A cracking noise is heard, which becomes more and more evident as the movements are continued, and at the end, it may be, of *half an hour*, the adhesions may have so far given way as to allow of motion in all directions to a very considerable extent, in a joint which had appeared completely anchylosed." I say this is not the manner in which this operation ought to be performed. It is capable of abuse, just as is any other operation; but when it is performed as I have above described it, I do not know an operation more successful than this is in the whole range of surgery, or one more free from danger.

When the joint retains its normal external form, the adhesions are easily broken down by the hand, when the limb is properly placed in position and the full effect of chloroform has been obtained; as you have seen in cases not alone under my care, but, I believe, also under the care of every surgeon of the

hospital. I will especially refer, however, to one of the latest cases which has come under treatment in the hospital—namely, that of Mary C., in Princess's ward. This patient had suffered from rheumatic inflammation, and was admitted into the hospital with partial anchylosis of the knee and of the ankle. The tendo Achillis was divided, and, when the puncture had healed, the adhesions were ruptured by flexing the foot upon the leg. On a subsequent occasion the hamstrings were divided subcutaneously, and, the punctures having healed, the adhesions at the knee-joint were ruptured by flexing the leg upon the thigh. This patient walked well when she left the hospital, and without the least lameness; and the knee and ankle of the affected side were as free as those which had not required operation.

It is a point to remember, that after dividing the tendons, and before the punctures have healed, the adhesions should not be ruptured; or they should be ruptured only with great care, lest the puncture should be extended into a rent. This extension of the puncture is much easier to effect than might be supposed, and it is therefore safer to allow the punctures to close before any force is employed.—*Lancet*, *Feb.* 6, 1869, *p.* 181.

51.—ON A CASE OF SUBPERIOSTEAL EXCISION OF THE ELBOW.

By T. Holmes, Esq., Surgeon to St. George's Hospital.

[The fact of the reproduction of considerable portions of bone, when the periosteum which covered the original bone has been left entire, is established by cases published by Langenbeck and Mr. Joseph Bell. In the great work of M. Ollier an account is given of all (except the most recent) cases in which such reproduction has been ascertained.]

Upon the strength of these authorities, let us assume, then, that if the whole thickness of a bone be dissected out of its periosteal sheath, there is, under favourable circumstances, a probability of its reproduction—between limits which our present experience is as yet insufficient to point out:—can this fact be used in any way to improve the results of excision of the joints? I will only speak of the superiosteal excision of the elbow-joint, because this is the only operation of the kind of which I have had personal experience; and also because there are far larger and more trustworthy data in surgical literature for forming an opinion as to the value of this, than of any of the other subperiosteal excisions.

I will, in the first place, present to you my patient, and read extracts from the notes of the case:—

The patient, a boy aged 12, was admitted October 14, three weeks after an accident, in which the joint had been laid open by the point of a pair of scissors, which ran in between the external condyle and the head of the radius. Soon after his admission, the head of the radius separated from its shaft and came away; and as a considerable portion of the humerus was still bare, and there was great pain, suppuration, and loss of motion, the joint was excised subperiosteally on November 19, the humerus being removed above the condyles and the ulna, just through the coronoid process. The radius was not interfered with. The periosteum separated easily from the bones. A slight accident occurred in passing the chain-saw round the humerus, but its section was easily accomplished with an ordinary keyhole-saw. Its structure was much condensed by inflammation.

All went on well after the operation. At the date of this lecture, January 13, 1869, eight weeks after the operation, the wounds were entirely healed; passive motion could be accomplished through about 30°; the child could carry the hand to the mouth and head, but had gained little voluntary power, though this was then daily improving. There was a great deal of thickening around the end of the humerus.

The operation is simple enough. The incision which most surgeons now generally use will serve, viz., a single longitudinal cut running between the olecranon and outer condyle. The surgeon has at hand a number of "raspatories" or chisels of various shapes—some with blunt, others with sharp edges; and it is well, in order to avoid loss of time in an operation, to have the handles of the sharp and blunt raspatories made differently. Having cut down quite freely on to the olecranon, and divided the periosteum covering it, the operator proceeds to detach the membrane carefully from the bone, taking care to proceed slowly, and not to use such violence as may lacerate the periosteum. The triceps tendon is also separated by keeping the edge of the sharp raspatory (or "detache-tendon," as Ollier calls it) carefully applied to the point of the process, while directing the instrument at right angles with it. Having thus cleaned the olecranan, the surgeon proceeds to deal in the same way with the back of the humerus, and the common tendons springing from its condyles. The ulnar nerve is, of course, raised up with the other soft parts covering the inner condyle, and will not usually be seen. When the back of the humerus has been satisfactorily cleaned, the chain-saw is to be carried between its front surface and the periosteum. This is accomplished by pushing the curved raspatory, which I show you here, between the periosteum and the bone. You will see that this raspatory

is deeply grooved, and that it has a sort of eye near its end. In this eye is threaded a ligature attached to the chain-saw, and thus the chain-saw is drawn up the groove of the raspatory, and lodged between the periosteum and bone. After the humerus has been divided it is to be seized with the lion-forceps, tilted backwards, and cleaned from the periosteum which coats its anterior face. The coronoid process will then be fully exposed, and should be carefully cleaned from the periosteum and tendon.

I have practised this operation on the dead subject often enough to have assured myself that in ordinary circumstances it is quite feasible. Huëter says, however, that in Langenbeck's experience several cases have been met with where the periosteum was not separable from the bone. In such cases, no harm has been done beyond the loss of a minute or two, and the operation can be finished in the common way.

The main advantage claimed for the subperiosteal operation is that the joint may be regenerated, and thus a more useful and more powerful arm be obtained. The reality of such reproduction is attested by the assertions of numerous operators, that after excision has been practised in this method they have distinctly felt the olecranon and condyles of the humerus reproduced. This is a matter on which a surgeon of experience can hardly be deceived; but it is of course more satisfactory to have the dissection of the parts; and this conclusive proof has now been furnished by a case published by Dr. Doutrelepont in the last number of Langenbeck's "Archiv." Bd. ix. p. 911. In this case subperiosteal excision of the elbow was performed at the age of 18, about four years before death. Two-thirds of an inch of the humerus was removed, the section running through the condyles; the olecranon and coronoid process of the ulna (1½ inches) and the head of the radius were also removed. The drawings attached to Dr. Doutrelepont's paper show that the condyles of the humerus had been entirely reproduced,—the internal condyle rather exuberantly, so as to form a deep groove for the ulnar nerve. The olecranon was also reproduced, and was both longer and more curved than in the natural state —a circumstance to which I must recur hereafter. The head of the radius was also reproduced, and was united to the ulna by an orbicular ligament as in the natural joint. There was a regular joint between the ulna and humerus (an articular surface, surrounded by a capsule, being formed on the summit o the reproduced sigmoid notch), and true hyaline cartilage had also been reproduced. There was no appreciable shortening o the arm, and the muscles were as well developed on that side as on the other. Pronation and supination were almost natural;

and flexion and extension were perfectly good, but within the limits of 75° to 120° only.

This case is a perfectly conclusive proof of the reality of reproduction of the bones, and of the formation of a true articulation (with cartilage and capsule complete) after the operation in question.—*Practitioner, Feb.* 1869, *p.* 65.

52.—ON THE REDUCTION OF OLD DISLOCATIONS.

By Bernard E. Brodhurst, Esq., Assistant Surgeon to St. George's Hospital.

[It was laid down as a rule by Sir Astley Cooper, that in dislocations of the hip, attempts at reduction should not be made after eight weeks of displacement, and in those of the shoulder after three months. The use of chloroform, however, compels us to re-consider and modify our opinions on such questions as these.]

The mode in which reduction of an old dislocation should be proceeded with, that the operation may have a successful issue, is of great importance. I will relate two cases as examples of successful reductions of long-standing dislocations, which will together illustrate perhaps every point that it is necessary to consider.

It is doubtful if the capsule is ever an obstacle to the return of the dislocated bone. Certainly the altered shape of the head of the bone never can prevent the return of the head to its articular cavity. And it is probable that where the articular cavity is partially obliterated, it is the result of extraordinary violence and consequent inflammation. I have found the cotyloid cavity retaining its depth and covered with cartilage after the head of the femur had been dislocated for three years. And Fournier has placed a dissection on record where the head of the femur had been dislocated during thirteen years, and in which the acetabulum retained its form and depth and cartilage.

Chloroform having been fully administered, the adhesions around the extremity of the bone are to be ruptured by free movements of the limb, and these having been separated, the dislocated bone will be replaced by traction and manipulation, and without extension and the use of the pulleys. In some cases it is necessary to have recourse to the subcutaneous section of tendons before proceeding to reduce the dislocation; and when this is done, the punctures should be allowed to heal before attempts at reduction are made.

Some time ago, I saw, with Mr. Chalk, a patient, fifty-three years of age, who had fallen from a height of twenty feet and dislocated the humerus beneath the pectoral muscle. The swell-

ing was considerable at the time, so that the dislocation was not discovered by the surgeon who first saw this patient; but afterwards, an attempt at reduction was made, which, however, was not successful. Four months later, he presented himself at a large metropolitan hospital, that an attempt at reduction might be made. He was persuaded, however, not to submit to any attempt to replace the head of the bone. Two months after this, I saw him. He was suffering acutely, and was unable to move the limb, or to carry it without support. Any attempt at motion caused excessive pain, especially about the neck of the humerus and in the region of the elbow.

The head of the humerus could be distinctly felt lying beneath the pectoral muscle, where it appeared to be firmly fixed. The deltoid, biceps, and pectoral muscles especially were atrophied; but also the whole limb was wasted. The fingers were numb. The elbow was somewhat removed from the side, and was inclined backwards, where it was fixed and immovable; the forearm was flexed, and the hand was carried forwards.

Under these circumstances, we determined to endeavour to replace the head of the bone; and although the humerus had been dislocated now for 175 days, we considered ourselves justified in making the attempt at reduction. The patient was therefore placed completely under the influence of chloroform, and the scapula was firmly fixed both laterally and from above. The adhesions about the head of the humerus were then broken up by to and fro motions of the humerus and by freely rotating the head of the bone. Then seizing the wrist, I drew the arm directly upwards, when the head of the humerus immediately slipped into the glenoid cavity with a slight click. A pad was placed in the axilla, and the arm was bandaged to the side. The patient remained in bed for three days, and on the sixth day the bandages were discontinued, and gentle motion was commenced. There was no disposition at any time for the bone again to become displaced.

After some considerable time, the power of motion was in great measure, if not entirely, restored; pain and numbness ceased, and there was no difference in the fulness of the two shoulders; so that when I last saw him, this arm was almost as useful as the other.

On the 8th of July, 1868, Elizabeth Costin, nineteen years of age, was admitted into the hospital with an old dislocation of the wrist forwards. This dislocation resulted from a fall on to the palmar surface of the extended fingers, and it occurred six years before her admission into the hospital. The wrist and fingers had entirely lost all power of motion. On the day after her admission into the hospital, the flexor tendons, namely those of flexor carpi radialis, palmaris longus, flexor sublimis,

and flexor carpi ulnaris, were divided subcutaneously; and four or five days later, the punctures having healed, chloroform was administered, the adhesions were ruptured, and the hand was restored to its normal position by flexing and subsequently extending the hand upon the forearm. The limb was then laid upon a straight splint and bandaged firmly to it. After some few days passive motion was commenced, and for this purpose an instrument was constructed with a joint corresponding to the wrist-joint, which supported the extremities of the radius and ulna and the carpus, and which allowed of motion without displacement of the wrist.

In old dislocations, then, recourse is to be had to manipulations, with or without the previous subcutaneous sections of tendons, rather than to the pulleys and violent extension of the limb. Violent extension may occasion rupture of vessels and nerves, as well as of the integument and the muscles; it may even occasion fracture. But these accidents cannot occur when manipulations are employed to restore the limb after the adhesions have been ruptured. When, as in the cases now related, there has been little or no attempt at repair, and where the limb remains not only motionless but painful, recourse may be had, even at a very late period, to the means above detailed to restore the position of parts and the motion of the joint.—*St. George's Hospital Reports, Vol.* 3, 1868, *p.* 70.

53.—ON THE REPRODUCTION OF BONE.

By M. L. Ollier, Surgeon-in-chief of l'Hôtel-Dieu de Lyon.

[We have appended M. Ollier's name to this article, though it is in fact a review of several other works besides that of M. Ollier. M. Ollier made the following experiment to determine the true function of the periosteum.]

A flap of periosteum was dissected from the surface of a bone, but not completely detached. The free end of the flap was then passed around the muscles in the neighbourhood and brought close up to the end which remained attached to the bone. It was fixed by suture to the skin to prevent retraction. The outer wound was then closed. Of the first experiment described, which was performed on the tibia of a young rabbit the following was the result:—Some little swelling of the limb succeeded the operation; within a week the periosteal flap could be felt increased in size and consistence, and within a fortnight already hardened. In six weeks the animal was killed, and, on examination, it was found that the periosteal fibrous ring had become a bony one, fixed to the tibia by one end and free at the other. The new bone looked normal; it was surrounded by periosteum,

and had a smooth and compact surface. On section, the interior looked as if it were becoming hollowed out. Under the microscope the ordinary characters of bone-tissue were discovered.

The periosteum of all bones and of all parts of a bone does not ossify with equal readiness. That of the long bones is better for this purpose than that of the flat; and of the former, that belonging to the shaft near its junction with the epiphysis is better than that upon any other portion of the bone. It is least good for transplantation where the muscular fibres are inserted upon it, being here much thinner than elsewhere.

Having proved the importance of the periosteum in the process of ossification, M Ollier tested its utmost power by removing whole bones, first carefully dissecting off their periosteum, and, as far as possible, leaving the connections of the latter with surrounding parts uninjured. After this fashion the radius and other bones were operated on with success, tolerably complete regeneration taking place in many cases. No reproduction occurred when the periosteum was removed with the bone.

After the consideration of subperiosteal resections of bones, the author proceeds to describe his experiments on the excision of joints, and dilates at some length on the advantage of preserving, as far as possible, in these operations the integrity of the periosteum and ligaments which surround the articular ends of the bones. Cases of resection of the joints of young animals are then given. The results were extremely good, the general shape and appearance of the bones being well reproduced. As an instance we may quote the case of a young dog, five or six months old, from which the elbow-joint was completely removed by the subperiosteal method, together with a third of the shaft of the humerus and a considerable portion of the upper ends of the radius and ulna. The dog was killed two and a half months after the operation. On examining the the joint it was found that a well-marked trochlea had been reproduced. There were also two well-marked and partly ossified condyles with a distinct and deep intercondyloid fossa. The bones of the forearm had been somewhat drawn back by the triceps. The new olecranon was more curved than the old one, and the ossification had extended a little into the tendon of the triceps. The extremity of the radius was surrounded by fibrous tissue incorporated with the capsule; its articular cup was not reproduced. The articular surfaces of the bones were joined together by a thick capsule in which were found strong lateral ligaments. The muscles had preserved their normal attachments. The movements of flexion and extension were re-established, the latter rather limited by the too great curvature of the new olecranon. The paw was flexed on the fore-arm by the retraction of the flexor muscles.

An instance of excision of the knee-joint, also in a dog, is related; and if the amount of bone removed be taken into consideration the result must be considered very good. About the same results were obtained after excisions of the articular and arthrodial joints. All these experiments were performed on young animals. In older subjects less successful results were obtained; but even in these the sub-periosteal method was proved to be incontestably superior. In all cases, old and young, removal of the periosteum with the bone was followed by little or no regeneration.

In some experiments on the growth of bones, M. Ollier proved that increase in length takes place in the arm bones chiefly at the upper extremity of the humerus and the lower ends of the radius and ulna; while the opposite occurs in the leg. This, as the author observes, is not a mere re-statement of the fact that the epiphyses of the bones of the arm and fore-arm are joined to the diaphyses sooner at the ends of the latter nearest the elbow than at the other, while the reverse holds good for the bones of the leg. For the increased growth takes place before either of the epiphyses has become united to the diaphysis; and, moreover, the times of normal junction of these are not sufficiently distant, one from the other, to account for more than a very small increase at one extremity above that which occurs at the other. The two facts, however, go together. Where the union of epiphysis with shaft is quickest, there is also the least contribution to the growth of the bone. In man, also, as Berard has noticed, there is another fact to be placed with these two,—that the nutrient canal is directed towards the end of the bone at which are the quickest completion of ossification and the least growth. Although, however, this last fact is true in man, its connection with the other two points to which reference has been made is a mere accident, and in no sense physiologically related to them. In the rabbit the nutrient canal of both femur and humerus are directed downwards, but the law of ossification and growth in these bones is the same as in man.

As may be gathered from his experiments on the lower animals, M. Ollier is a strenuous advocate for sub-periosteal resections, not only as against resections performed in the ordinary manner, but in contra-distinction to another operation of the kind, '*évidement*,' the supporters of which, headed by M. Sedillot, claim for it all the advantages of M. Ollier's operation, with freedom from many of its perils

The operation of *évidement* is no new one. There is scarcely any more ancient. Essentially it consists in scooping away all the diseased parts of a bone so as to leave a cavity with healthy bony walls, and has been practised by surgeons from Celsus

downwards. M. Sedillot has, however, employed the method in many cases in which the majority of surgeons would have resected or amputated the diseased bone. His object has been the same as M. Ollier's, namely, to make use of the periosteum as a means of regenerating lost bone. But while M. Ollier dissects off the periosteum by itself as completely as possible from the underlying bone, M. Sedillot scoops away the bone from within, and leaves of it only a thin shell to support the periosteum, to which, and not to the shell of bone, he gives the credit of the regeneration which takes place. He claims, therefore, for this operation the same purpose or intention as that of M. Ollier, with a better means of carrying it into effect. M. Ollier denies both statements. He believes that the regeneration which follows *évidement* is due to the bony shell which is left; and that the latter is not, as his opponent in argument believes, a mere temporary mould destined to disappear when the periosteum has reproduced sufficient new bone to enable it to dispense with its services. He denies, too, emphatically, that *évidement* is for all or even the majority of cases so good an operation as sub-periosteal resection; and although he admits, with all other surgeons, that excellent results are often obtained by its means, especially in chronic inflammatory conditions of the shafts of bones or of their epiphyses when there is no communication with the neighbouring joint, he is a very decided opponent of the operation of scoping out the articular extremities of the bones of a large joint.

Having thus disposed of the rival operation of *évidement*, M. Ollier proceeds to relate his clinical experience of the value of sub-periosteal resections; and to silence all doubts respecting the true regeneration of bone after operations of this kind, he relates a case of excision of the upper end of the humerus. The case has been previously published, but it will be well to trace briefly its main outlines. It was that of a girl, fifteen years old, from whom M. Ollier removed the upper half of the humerus on account of chronic inflammatory disease, not, he specially adds, necrosis. The periosteum was carefully preserved in the operation and dissected, where still adherent, from the subjacent bone. The ligaments and tendons were also dissected from the head of the bone without cutting them, and the upper part of the bone being thus stripped completely naked was sawn off. In this way a periosteal and ligamentous sheath was left tolerably complete. The patient had a long and chequered convalescence, but at last recovered well with reproduction of bone within and from the periosteal sheath. The proof of this last statement, namely, that the regenerated bone was produced from the periosteum and not from the cut extremity of the old bone, lay chiefly in the fact that during convalescence there was for some

time mobility of the upper and new piece of the humerus on the lower and old part, which could not have happened had the new bone been developed continuously with the old. The movements of the shoulder-joint were fairly restored, and although no new head to the humerus could ever be felt, there was evidently the restoration of a scapulo-humeral joint of the same type as the original. For, adds M. Ollier, not only were the chief movements restored, but the humerus could be rotated on its own axis, and the deltoid separated the elbow from the trunk to a distance of six inches. To objectors to sub-periosteal resections on the score of the difficulty of separating the periosteum from the bone the author points out that the membrane is thicker and less adherent in young subjects than old, and thicker and less adherent in inflamed than in healthy bone.

The next portion of M. Ollier's work is devoted to the consideration of the best method of performing the operation, and he lays especial stress on the advisability of cutting neither muscle nor tendon; and if the former be divided of necessity its nerve should be carefully avoided. By thus operating carefully, the tendons are left with their attachments to the periosteum uninjured; and, in resections of joints, there remains an almost uninterrupted fibrous *loge* formed by periosteum, tendons, ligaments, and capsule, to which the muscles preserve their proper attachments. Other practical instructions are given by the author, and will well repay perusal. The following are his general rules for the operation as performed on the joints:

1. A single straight or sinuous incision through the skin in the direction of the long axis of the limb. If absolutely necessary, incisions perpendicular to the main one must be made.
2. A single straight incision of the capsule.
3. The ends of the bones should be dislocated before being sawn, in almost all cases but those of the wrist and ankle.
4. If the condition of the bones beyond the line of section require it, the gouge may be used; but *évidement* should not be practised before resection.
5. The resected bones should be kept extended unless when a bony anchylosis is required. The degree of extension must be in proportion to the expectation of regeneration.

Special instructions are also given by the author for the resection of each joint.

M. Ollier's favourite instrument is one which he has named the "Sonde-rugine," and which is a long gouge, curved so as to allow of its being used as a protection to the periosteum after it has separated it from the bone. It is pierced at its extremity, so as to serve for carrying a chain-saw around the bone after the separation of the periosteum. For cutting the bone he prefers the bone-forceps when practicable and the chain-saw when a saw

is absolutely necessary; the great object being to divide the bone with as little difficulty as possible, and to avoid all disturbance, especially of the periosteum, beyond the line at which the section is to be made.

With the operation of sub-periosteal resection, the use of nitrate of silver or the actual cautery may be combined, when fungous granulations or fistulous tracks seem to render either of them necessary.

The degree of extension to be kept up after the operation depends on the chance of a good result. In a young subject, for instance, with a tolerably healthy state of the bone, much more regeneration may, of course, be expected than in the presence of the opposite conditions, and therefore more extension may be safely applied.

[M. SEDILLOT, of Strasburg, says:]

Superiosteal resections should be rejected as illogical, inefficacious, and dangerous:—"We maintain that the periosteum completely separated from the bone beneath, whether it be left in its place or taken to another part of the body, as a sheath or flap, will be of no service to surgery as the means and organ of regeneration of bones." And many other sentences of the same kind might be quoted. Referring to M. Ollier's experiments on the lower animals, he remarks that curious as they are physiologically, they are useless to surgery.

[M. Sedillot's favourite operation is that of *évidement* or gouging out the diseased portion of bone.]

Theoretically, M. Sedillot's position is a good one. "The first indication is to avoid the sacrifice of any healthy part of the skeleton, since this portion, clothed by its periosteum, is the most efficacious and certain means of reproducing the whole of the bone. Such is the foundation of our method of *évidement*, and our gravest objection to subperiosteal resection." Like his opponent, he refers to the benefit derivable from leaving unharmed the connections of the periosteum with the parts around. So far, of course, the author is justified in holding his own; but in the face of M. Ollier's cases, as well as those of others, the following sentence is rather inexplicable:—"What has happened to the partisans of subperiosteal resections? They have taken away the bone. The periosteum, unsupported becomes shrunken, and is folded by the contraction of the muscles; it inflames and suppurates. In the majority of cases the limb is shortened and deformed with no production of new bone."

Some experiments on young dogs, to test the degree of repair possible after gouging out the interior of bones, and leaving only a thin layer in contact with the periosteum, were

undertaken by M. Sedillot, and followed by good results :— "Les évidements des diaphyses et des extrémités des os sans destruction des lames osseuses periphériques et par consequent sans penetration dans les jointures, ont toujours réussi."

The cases of disease in which *évidement* is useful and practicable, according to M. Sedillot, are chronic inflammations of bone, tubercular disease of the articular extremities, fibrous, vascular, encysted, and certain limited enchondromatous tumours. The operation, too, may be employed as an assistant to articular resections, and by its means much less bone is required to be removed. The operation itself, as we have said before, resembles very nearly that undertaken so frequently by almost all surgeons for the removal of carious bone, but involves more methodical dissection of the periosteum than is common in this country ; and the gouge is especially employed so as to leave only a thin shell of bone immediately within and supporting the periosteum.

A large part of M. Sedillot's work is occupied by the relation of instances in which the foregoing operation has been employed by himself or others. The difference, however, between his method and that of other surgeons is not so great that we can afford space for quoting from his cases. It seems to us rather that these operations should be classed with the ordinary gouge operations, and the two compared with subperiosteal resections as performed by M. Ollier and others.

Dr. Stokes's paper on "Periosteal Preservation in Operative Surgery" is probably fresh in the memory of most of our readers. It is a very good and practical *résumé* of his own personal experience on the subject. He is an earnest supporter of Professor Syme and Langenbeck and M. Ollier ; and, indeed, his attention was specially directed to this subject during attendance on the cliniques of the two last-named surgeons.

The two following cases may be quoted from Dr. Stokes's experience in this matter ; and he relates several others.

"The first of these operations was performed on a girl aged 12, of delicate habit, who was under my care in the autumn of 1864 ,and who suffered from strumous disease in her left elbow-joint. The patient stated that, four months previous to her admission into hospital, she received a fall in which the elbow was struck against the ground with great violence. After falling, the patient suffered severe pain in the joint ; it swelled greatly ; and she found it impossible to extend or 'stretch' it, to use the patient's own expression. The inability of extension of the arm remained a permanent condition. Three months after the accident the patient was admitted into my wards in the hospital. I found the arm forcibly flexed ; extension was impossible. The soft parts about the joint were swollen and puffy,

so that it was quite impossible to determine whether the original injury was an epiphysary disjunction, which the age of the patient rendered probable, or a simple luxation. There were three or four sinuses, situated over and in the immediate vicinity of the internal condyle; and, on introducing a probe into any one of these, the existence of soft diseased bone could be readily determined. I accordingly performed the operation, adopting the long vertical incision, carrying it over the ulnar side of the olecranon, and, taking especial care not to divide the triceps tendon, proceeded to raise the periosteal envelope by means of the various formed raspatories devised for the purpose. The elevation of the periosteum was not attended with any great difficulty, and the remaining steps of the operation were then completed in the ordinary manner. The limb was afterwards put up in a gypsum bandage, and kept in a continual bath for four weeks. After this, the wound being all but healed, gradual flexion and extension were commenced. Three months and a half after the operation, the power and flexion and extension of the joint was almost perfect; and now, at a period of little more than three years after the operation, during which period there has not been the slightest evidence of a reappearance of the disease, the patient enjoys every motion that the healthy joint possesses, perfect power of flexion, extension, pronation, and supination; and what bears more directly on the immediate subject of this communication, there is a most obvious osseous re-formation, not only of the condyles, but also of the olecranon. This reformation of the olecranon has also been frequently observed by Langenbeck, and also by Huctor, one of his former assistants."

The other case which we shall quote from Dr. Stokes's paper also, as he remarks, affords a striking illustration of the osteogenetic properties of periosteum, and, consequently, of the great practical importance of preserving it in resections.

"The patient, a young woman, about 19 years of age, suffered from suppurative osteitis of the right ulna, the result of a severe blow. A free incision was made down to the bones; and over this, which I found extensively diseased, the periosteum was much thickened. Having divided the membrane by one of Nélaton's so-called periosteal knives, I then detached it by means of raspatories from off each side of the bone. The diseased portion of bone, about two and half inches in length, was then removed by small resection-saws. Three months after the operation, the wound was completely healed. New bone had formed throughout, and the patient was enabled to return to her employment, which was that of a house-servant."

Dr. Stokes has also practised with success M. Ollier's operation for the restoration of the bone by including in his flap

periosteum from the frontal bone. The case was one of a young man whose nasal bones had been completely destroyed by lupus. "About fifteen months after the operation, I inserted in two different situations in the nose the so-called "entomologist' pins down to the newly-formed bone, and satisfied myself and others present, beyond all doubt, as to its existence." —*British and Foreign Medico-Chirurgical Review, April* 1869, *p.* 334.

54.—ON THE TREATMENT OF FRACTURES OF THE LEG.

By James Paget, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

[All the cases of fracture referred to in the following clinical lecture were admitted into the hospital within a period of one week, in consequence of the occurrence of what is known as boxing night at the London theatres.]

All these fractures that I have mentioned were put up at once. That is the custom which we adopt here. I think that, as you watch fractures, you will find that there are very few instances indeed in which you need depart from this rule—very few in which the damage done is such as to make it at all advisable to leave the fracture for a time, imperfectly at rest, on a pillow for any supposed righting of the fragments, diminution of swelling, or other supposed change for the better. I do not say that there are no such cases; each case is to be judged upon its own special grounds; but you may always begin the treatment of a fracture with a strong prejudice in favour of putting it up at once.

With regard to the manner of putting up a fracture, you will always have your choice of what is called the immovable apparatus, with gutta percha, and starched bandage, or gum and chalk, or what I more commonly use, plaster of Paris. There is no question of the considerable advantage of these in the commonest and simplest forms of fracture of the lower or upper extremity; yet I think that this apparatus should be used among out-patients only when you can be sure that the patient posseses sobriety and intelligence enough, and home comfort enough, to be able to manage his apparatus in some measure for himself. And the security of putting up fractures with splints and suspending them, as we do here, is so much greater, that if we have to admit the patients into the hospital, and to keep them here, we always adopt this plan first, except in the very simplest form of fracture of the leg. It is of this manner that I am now going to speak to you—the manner in which, in my

wards, we put up fractures of the leg, whether of tibia and fibula, or of either bone alone.

Here is the apparatus, the principal thing about which I take to be this back splint. As you look at that and compare it with the back splints commonly made, you will see first that it is narrower than they are; so that for a man of full size the splint is not usually, at its widest, more than three and a half inches wide. It is narrowest about the ankle, where it is two and a half inches wide, and beyond which there is a large opening in it for the heel. Moreover you see the splint is nearly flat transversely; it is not hollowed out, as it is supposed it should be, to fit the back of the limb. Then it is very little curved; so little curved that you will say that it could not fit the leg of a very robust man. The calf, you would say, could never rest on that. But you must remember that you want a splint that is to fit the leg, not only at the time of admission, but also, and much more, the leg as it will be some ten days or a fortnight afterwards, when the leg has begun to waste, when the calf has fallen flat—gone to nothing. On a very curved splint, one that fitted the leg in the first instance, there will be no comfort after the lapse of a week, when the leg begins to waste. This splint is perfectly simple in its structure, a long and nearly flat piece of iron, bent at a right angle for the foot, and having two short transverse bars projected from its sides and looped to receive the slings. I would have you observe the direction of the foot-piece, which is simply turned up from the back-piece of the splint, and turned to very nearly a right angle with the line of the back part, quite straight, narrow, and perfectly simple. On that arrangement the foot-piece depends mainly the arrangement of the limb.

Besides this there are these two flat, wooden side-splints, duly padded like the back splint, and with care taken that they should be sufficiently long for the ends to project a little beyond the foot-piece of the back-splint, and to reach to some three or four inches above the patella. They should moreover, always be broad enough to enable the straps that are put round them completely to encompass them without touching the leg. It is important for the comfort of the patient that no strap should come in contact with the front of his leg; and, after all, however one may regard anatomical considerations in putting up a fracture, the one most essential idea is that of comfort. If the patient is so disquieted by any of his apparatus that he cannot lie well or sleep well, the good progress of the fracture is a thing hardly possible; and great disquietude is produced by straps, bandages, or cutting edges of any kind which come in contact with any part of the skin.

The rest of the apparatus consists simply of pads stuffed with tow, one for each splint; and of the means, which I will pre-

sently speak of, for securing the foot to the foot-piece, and the knee to the back-splint; and then besides, the simple cradle that we have, with the double bar on the top for suspension by the loops of the transverse bars fixed to the back-splint. There is also a prolonged piece of iron from the distal end of the cradle to secure that the bed-clothes shall in no case touch the foot-piece or any part of the apparatus, or the patient's leg.

Then observe how the patient's leg is set upon this back-splint. I do not speak of the manner of reducing the fracture; that must depend on the considerations that I spoke of the other day. The limb having been put into a right position, it is simply laid on the back-splint, with no additional pad beyond that which is fastened to the splint itself, unless in some cases where there is a great hollow above the os calcis, and then it is very useful to have a pad under the tendo Achillis—an additional pad to that with which the splint itself is covered. But the chief thing is the fixing the foot to the foot-piece.

You will observe, if you examine fractures of the leg that have united badly, that there is not one way, but several, in which the leg may be spoiled. First of all there is shortening. That comes, generally speaking, either from the fracture being so oblique that it is hardly possible to prevent one portion of the bone from sliding on the other, or from insufficient extension having been used at the time of setting. But there are other distortions which are really worse than shortening, for shortening can be corrected by adding something to the sole of the boot or shoe. A worse distortion than this is when the foot is rotated outwards, so that when the man gets up from what is supposed to be the cure of the fracture, he walks with the toe of the fractured limb not directed forwards like the other, but rotated outwards, a position in which firmness of support is hardly possible. And there is a worse thing than that. It is when the patient rises from the fracture with the sole of the foot either inverted or everted, so that from that time he has to walk, not fairly on the flat of his foot, but on the outer or inner margin of it. It is from want of care in reference to that distortion that fractures of the fibula are sometimes followed by one of the greatest miseries that can result from fracture of the lower extremity; for when a patient is consigned for life to walk on the inner or outer margin of his foot, he loses I know not how large a proportion of the proper strength of his limb, and nearly all the comfort of his walking. He is in the position of a person who has been congenitally deformed, so as to walk on an inverted or everted foot. He is as ill off as those with varus or valgus; nay, he is in a worse condition than they are, because his case, depending as it does upon distortion of the

bones, and not of the joints, scarcely admits of repair. No apparatus can put a patient into comfort who rises from a fractured fibula or fractured tibia and fibula with this defect.

Take, therefore, the foot-piece of the splint as the guide for the position of the foot; and if you do but see, in the management of fractures of the leg, that the foot of the patient and the foot-piece of the back-splint fairly correspond, it is hardly possible for the limb to fall into any of these defective methods of repair. That correspondence between the axis of the foot and of the foot-piece ensures that there shall be no rotation or version either outwards or inwards. Then, again, you should be careful that the foot touches the foot-piece by the three balls of the sole—the ball of the heel, the ball of the great toe, and the ball of the little toe. If the foot be set against the foot-piece so that these three chief points, upon which in standing or walking it rests, are in exact contact with the foot-piece, or nearly and evenly approximated to it, when the patient rises with the fracture healed they must hold the same position, and he be ready at once to bear his weight upon these three points. For the rest, this upper curved part of the splint must come in contact with the popliteal space, and you will observe that this upper part is very little curved, so that the limb is very little bent at the knee-joint. That is a most important thing to attend to, for if there be too abrupt an angle at the popliteal space, there is almost sure to be more or less pressure on the popliteal vein, and then consequent œdema of the leg, and the troubles that ensue from that.

When the limb is thus laid upon the back-splint, and the foot accurately adjusted to the foot-piece, it is secured in its position by the apparatus you see here, formed of gutta-percha, with layers of flannel or of old blanket put underneath it. These were adapted by Mr. Vernon at my request when he was my house-surgeon, to correct what I am sure is a source of considerable trouble in the management of fractures of the leg—the pressure consequent upon bandages encircling the limb and constricting it. They produce œdema of the whole limb, above and below the seat of fracture, and that œdema is often fraught with very evil consequences. Look carefully, therefore, to this—that there are no bandages constricting the broken limb. You will see that we never apply a bandage next to the limb, and within the splints. That is a custom of treating fractures which is sometimes adopted, but in which, when splints are used with proper pads, I can see nothing but evil. It serves no purpose to the limb itself by its compression, and it sometimes does considerable mischief by compressing veins when the limb begins to swell. It also conceals the limb from your view; whereas in every fracture that is under treatment you should,

as far as possible, see not only the seat of fracture, but all the adjacent parts of the limb, and have these at all times fairly under your inspection.

Then, even when the bandages immediately surrounding the limb are left out, it is not unfrequent to bandage the foot to the foot-piece and the lower part of the back-splint, and to bandage the knee and the adjacent parts to the upper part of the back-splint. But these bandages have, in like manner, a tendency to produce œdema, especially the bandage of the knee; for if you bandage the knee close down upon a firm back-splint, and it has to lie there week after week for five or six weeks together, the result almost certainly is that, by pressure on the popliteal and saphena veins, œdema will ensue below the constricting bandage—œdema at and about the seat of fracture.

Now observe the different sorts of œdema that are apt to ensue in fractures of the leg.

First, there is that general œdema of the leg which comes on from the mere injury; harmless and subsiding of itself when the fracture is put into a proper position. Then there is the œdema which sometimes comes from these encircling bandages —an œdema more full of mischief. Another form is that in which the foot is hung too much below the level of the knee, as it is in the old apparatus sometimes employed of the double-inclined plane, where the knee hangs over an angle, and the foot hanging low down, is sure to become œdematous. And then there is another kind: that œdema which we have been observing of late, which seems to depend almost entirely upon irritation of the veins of the limb by hard edges of bandages, and consequent clotting of the blood in the veins. There is a woman in Lawrence ward who shows this kind of œdema. After the fracture of the leg had been repaired well in the ordinary apparatus, a plaster-of-Paris bandage was put on, and its edge rubbed against a part of her saphena vein. Trivial as it may seem as a cause of so much distress, this is a cause which I have now seen in several cases. At the part irritated, the blood clotted, with pain and tenderness of the vein, and the clot began to gather other clots at both its ends; and so it went on till the greater part of the saphena vein was obstructed by clots, extending by means of this thrombosis, which Mr. Callender has particularly described in our Hospital Reports. One vein after another, in these cases, becomes filled with clot, till at last a firm, solid œdema of all the parts supplied by these veins ensues—an œdema which does no harm, to be sure, to the union of the already repaired fracture, but which disables the patient from the use of the limb for some eight or ten weeks after the fracture has healed.

There are, then, these four kinds of œdema which we find associated with fractures of the lower extremity; but the œdema that I wish to speak of especially is that which results from constricting bandages, whether put next to the limb, or so as to enclose the limb and hold it down to the foot-piece and the upper part of the splint.

See what mischief this œdema does. First of all, it adds very much to the sufferings of the patient by increasing the weight and tension of the limb, and consequently increasing his restlessness also. But then, if the limb is œdematous, all its nutritive powers are impaired, and I cannot doubt that sometimes the delay of the union of fractures is due to this cause. The proper circulation through the limb is retarded by pressure upon the veins, and the whole process of repair is hindered. But there is another trouble. It is this œdema which adds to the probability of the occurrence of "sore heel," as we have to call it, in the treatment of fractures of the lower extremity. Of all the vexations interrupting the progress of a fracture, this is one of the chief, not only interrupting the progress of the fracture, but very much prolonging the time of the patient's convalescence, when, after recovery from his fracture, he gets up with a slough on his heel, or on the upper part of the os calcis. It is a thing which you should be very careful to avoid. One of the means of avoiding it is, that the back of the splint is perforated by an aperture for allowing the heel to project a little through it, so that the heel does not rest against the mere hard surface of the splint, even though guarded with a pad. But another thing is that the heel should be kept from all sources of inflammation and œdema; for it is through these chiefly that the heel has a tendency to slough. If you will watch the different progress of cases of simple and compound fracture, especially of compound fractures followed by acute inflammation of the whole limb, you will see that in the one case the heel has little, while in the other it has more, tendency to slough, even though the manner of putting up be the same. Where there is inflammation, the whole nutritive processes of all the textures of the limb are very much lowered, and that not at the seat of fracture alone, but in every part of its extent. Then the heel, or anything else that is much pressed upon, is likely to slough. So with œdema. The whole nutritive power of the limb is impaired; and the heel, firmly held down, becomes excoriated or sore, and the recovery of the patient is seriously retarded.

In this apparatus, then, you see no constricting bandage encircling the limb at any part. The foot is held to the foot-piece by a layer of gutta-percha, which is placed, while soft and warm, across the whole dorsum of the foot, separated from the skin by

a layer of flannel, and, coming over the edges of the foot-piece, is fastened there with tape or string. The knee is held in the same manner; a layer of gutta percha, separated from the skin by flannel, is put over it, passes beyond the edges of the side-splints, and is held in its place by two straps and buckles. Moreover, to avoid the necessity of straps or bandages around the side-splints, these are held together, not only by the gutta percha and the straps which encircle it, but also by two transverse bands, which buckle across their lower end, and across and beyond the foot-piece. With that apparatus is fulfilled the design of having a limb held steady enough to its back-splint, without any place in which it is encircled by a bandage—without any place therefore in which any constriction is put upon its veins or other textures.

That which may seem to you as the defect of this apparatus is that there is no sufficient provision for the application of a continuous force of extension; and, for all that you see, the two fragments might here ride the one over the other, being so little held, as they may seem to be, by the layers of gutta percha. But remember how very little there is to displace the fragments of a broken limb when once it has been put fairly into place and put at rest. As I explained to you the other day, the muscular contractions, which are supposed to be the means whereby the fragments of broken bones are displaced, cease after the first three or four days; so that if an apparatus is only so adjusted that it may keep the limb during those days from all risk of muscular contraction, there is no risk of disturbance from this cause afterwards. See in the ward, now, a man who was admitted some weeks ago with fractured patella. On his admission the fragments of the patella were at least an inch apart. The limb was laid simply upon its back, level with the trunk; and at first it was quite impossible to retain the fragments together, or to bring them nearly into contact. But day after day the muscles, contracted at first, gradually relaxed, and then, of themselves, and with the contraction of the adjacent textures, the two fragments of the patella came close together—to within, at the most, a quarter of an inch. There is no risk of muscular contraction displacing the fragments of a broken bone at any time after the first three or four days. At least the case would be quite extraordinary, and require very special treatment, where such an accident would occur.—*Lancet*, *Feb.* 27, 1869, *p.* 287.

55.—ON THE USE OF CARBOLIC ACID IN COMPOUND FRACTURES, WOUNDS, BURNS, AND GUNSHOT WOUNDS.

By Dr. John Rose, Surgeon to the Kidderminster Infirmary.

Having used carbolic acid in numerous cases since its intro-

duction by Professor Lister, F.R.S., I do not hesitate to say that I look upon it as one of the most useful of modern therapeutic agents in surgical practice, and worthy of that distinguished, original, and philosophical surgeon. By its use conservative surgery has been rendered still more conservative, and a vast amount of misery, discomfort, and mutilation avoided. Since its introduction our operations have been less numerous, although accidents from machinery and other causes have been on the increase, and of almost daily occurrence. I observe that the reports from some of the London hospitals have not been quite favourable, and I think it the duty of those connected with public institutions to give it a fair trial, and report accordingly.

In recent wounds our honorary surgeons generally use lint soaked in a liniment of one part of carbolic acid to five of linseed oil. This seems to possess healing, antiseptic, anti-purulent, and even anæsthetic properties in a remarkable degree.

In burns, as Professor Pirrie remarks, "It seems to accelerate the subsidence of local symptoms, to procure rapid and perfect relief from pain, and to promote healing without suppuration."

We have at present under treatment two cases of gunshot wounds—one of the leg, with comminuted fracture of tibia and wound of posterior tibial artery, and the other of the hand, with severe laceration and destruction of soft parts. Both cases are recovering, carbolic acid having acted admirably. I may add that we have tried the carbolic lac plaster as prepared in Glasgow according to the recipe of Mr. Lister, and have found it very useful.—*Lancet, Jan.* 16, 1869, *p.* 89.

56.—ON THE TREATMENT OF VARUS.

By Bernard E. Brodhurst, Esq., Lecturer on Orthopœdic Surgery at St. George's Hospital.

The *treatment of varus* should commence within some few weeks of birth. Nothing is gained by delaying the operation; but, on the contrary, through delay more time is required to produce an equally successful result. From one to two months after birth is the time which should be selected for the operation.

In very slight cases the distortion may be removed by bandaging and movements of the limb; such treatment is long, however, and often it is unsatisfactory. In an ordinary case of varus the distortion cannot be removed by such means. With regard to mechanical treatment, Phillips says: "In the first degree of varus in infants, the foot may be restored without the division of tendons, and through the use of an instrument for extension only; but such treatment is both difficult of

execution and occupies much time, it is often painful, and it is rarely efficacious. In every case, even the most simple, it is better to divide the tendons."

The tendons which require to be divided in talipes varus are those of the tibialis posticus and the tibialis anticus muscles, and the tendo Achillis. And in dividing these tendons it is right to remember that, varus being a compound distortion, its removal must be effected by various stages. Thus, inversion of the foot should be first overcome, after the tendons of the tibial muscles have been divided : the distortion is thus reduced to the condition of equinus. In infantile varus the plantar fascia is seldom contracted, or so much contracted as to require division; but when it has to be divided, it should be done before the section of the tendo Achillis is effected.

In dividing the tendon to be operated on, the knife should first be passed well beneath it; and the cutting edge being then turned towards the tendon, this will be divided transversely on extending the limb. Some operators cut down upon the tendon instead of cutting upwards or towards the surface, believing this to be the simpler method. It is a mistaken notion, however, for not only is the mode which I have indicated easier to perform, but effusion of blood is spared by adopting this mode of division of tendons. If not always entirely bloodless, this operation is for the most part so; but it is difficult to avoid wounding vessels when the knife is used to cut down upon a tendon, and frequently under these circumstances the effusion of blood is not inconsiderable.

To divide the tendon of the tibialis posticus muscle, the tenotome should be passed down to the edge of the tibia, at from three-quarters of an inch to one inch above the malleolus, and the sheath of the tendon be opened freely, without enlarging the external puncture. The rounded knife may then be passed into the wound, and, guided by the edge of the bone, it may be directed beneath the tendon. In the adult the tendon being prominent and easily felt, the sharp-pointed knife may be slipped beneath the tendon immediately that the sheath has been opened; but in infants it is safer not to use a pointed knife for the division of the tendon.

The anterior tibial tendon should be divided immediately after the posterior tibial has been divided. The knife should be passed beneath the tendon from without inwards as it passes over the ankle-joint, and the puncture should be made close to the tendon, that the artery may not be divided. Occasionally, the anterior tibial is more tensely contracted than the posterior; in which case it should be divided first.

It is of real importance that the tendons now mentioned—namely, the tibial tendons and the tendo Achillis—should be completely divided, so that the restoration of the shape of the foot should proceed without hindrance. Should the tendon be transfixed, and consequently only in part divided, the treatment would be rendered, at least in a large number of cases, nugatory.

The division of the tendo Achillis has already been spoken of; and it is, therefore, unnecessary again to allude to it. Before, however, this tendon is divided, the mechanical treatment of varus must be undertaken.

After a tendon has been divided subcutaneously, the puncture is immediately to be closed with a morsel of lint, and the limb, having been bandaged, is to be bound to a well-padded, flexible metallic splint. It is a rule which should always be observed to place the limb, after division of the tendons, in the same position as before the operation; consequently, the splint is to be bent to the angle which the distortion represented, and bound on the inner side of the foot. When the punctures have healed—on the third or fourth day—the splint is to be removed, and one similar in kind, but longer, is to be applied on the outer side of the leg and foot. Even though a slight degree of traction alone be employed, it will be found that in the course of three days the foot will have yielded more, perhaps, than could have been expected from the amount of tension which may have been exerted. On replacing the splint the same effect will be produced, until at length the foot is fully everted.

If, in the infant, it is important, as has been already stated, to deal with talipes varus as a compound distortion, and divide the treatment into stages, it is of much greater moment to attend to this injunction when the patient is older; for, should the Achilles tendon be divided before inversion of the foot is removed, it may be impossible to bring the tarsal bones into their normal positions, and to unfold the longitudinal and transverse arches. It is therefore the rule not to divide the tendo Achillis, whether in infantile or in adult varus, until the foot has been fully everted. Although rotation of the anterior portion of the foot may only be slight, yet the difficulty of removing it, and replacing the bones in their normal positions, would be greatly increased by dividing the tendo Achillis, and thus destroying the fixed position of the os calcis.

There have been numerous cases of talipes varus lately under treatment in the hospital, varying in age from one month to twenty and more years; and you will have observed that in all

the treatment has been essentially the same—differing, however, in this, that the difficulty of removing distortion, increasing for the most part as age increases, requires different appliances for its removal. Many of you also have seen a case of congenital adult varus of forty-eight years, and in which the operation was brought to a successful issue. A straight, well-padded splint, carried to the knee on the outer side of the leg, and extending beyond the foot, is sufficient to remove inversion in a large number of instances of varus; but it is obvious that such an instrument is but ill-adapted to its purpose, and in severe deformity it is entirely inefficient. The instrument to be employed in this as in every case of distortion should be constructed in accordance with the mechanical relations of the parts to which it is to be applied, and the centres of motion should correspond as nearly as possible with the centre of motion of the articulation to be acted on. Scarpa's shoe clearly does not fulfil this desideratum. We have, however, in use in the wards of the hospital instruments for the treatment of varus which have lately been brought to a degree of perfection which was formerly unknown. Their action will be much more easily understood by observation in the wards than by description, and therefore I abstain from any description, but invite you to see them as they are applied in the wards.

The plantar fascia, when contracted, should be divided before the support of the Achilles tendon is removed from the os calcis, whether in infantile or in adult varus; otherwise the longitudinal arch of the foot can scarcely be fully expanded. It is rare, however, that the plantar fascia requires to be divided in the infant; yet occasionally the central portion of the fascia may require division, or the inner band of fascia may alone be contracted. In either case the contracted portion should be fully divided. In the adult the plantar fascia offers a serious impediment to the restoration of the shape of the foot, and always requires to be freely divided.

After the deformity has been removed, active and passive exercises of the limb, together with friction, galvanism, bathing, and other like means, must be employed, until easy if not complete power of motion is gained; for if the shape of the foot alone is restored, and the power to move it is overlooked, the patient will walk, but without elasticity and without motion at the ankle-joint. Then, distortion, to a slight extent at least, will recur, and the tendons will again require to be divided. Thus it is that the treatment of talipes varus consists of, in the first place, the removal of the distortion; and secondly, the restoration of the functions of the limb.—*Lancet*, *Dec.* 5, 1868, *p.* 720.

ORGANS OF RESPIRATION.

57.—ON THE TREATMENT OF NASAL POLYPI BY POWDERED TANNIN.

By W. M. Banks, Esq., Liverpool.

The general practitioner is often consulted, at any rate in the first instance, in cases of nasal polypi. Now, if unwilling to perform the operation of evulsion himself, and equally unwilling to hand over his patient to an operating surgeon, I would suggest a trial of a method of destroying them, proposed by Mr. Bryant about a year ago. It is well known that nasal polypi are seldom or never single, and that, after having removed all the larger ones with the forceps or wire noose, there is too often a crop of young ones left behind, which soon sprout up and involve a second, a third, and often several operations, before they are all got quit of. Mr. Bryant hit upon the happy idea of blowing tannin into the nostrils, after the operation of evulsion, for the purpose of withering up the young succulent gelatinous brood, which remain behind; and in this he was so successful, that he also tried it on the larger ones, and with very marked benefit. During the past year, I have used it in a few cases myself, and, in one or two, the effect has been most satisfactory, the polypi having either shrunk away, or actually dropped off, and so the patient has been spared the misery of undergoing a painful and very repulsive operation. A few grains of tannin are simply put into a quill, which is inserted as far as possible into the nostril, and then, with a puff, the powder is blown out over the mucous membrane. This, however, involves the presence of a second person to blow the powder up the nostril. I have found that this can be obviated by having the tannin put into a hollow india-rubber ball, with a short wide nozzle attached to it. A smart compression of the ball sends the powder flying up the nozzle, and so the patient can employ the remedy himself.

These little implements are now sold in all druggists' and surgical instrument makers' shops, for the purpose of giving small injections. The nozzle of course must come out to allow of the powder being poured into the ball, and the tannin itself should be finely pulverised. The successful cases which I had were in young girls, and I should think that the remedy will act best where the polypi are not of very old standing, and seem to be soft and gelatinous.—*Liverpool Med. and Surgical Reports, Oct.* 1868, *p.* 114.

58.—ON THE TREATMENT OF OZÆNA.

By W. M. Banks, Esq., Liverpool.

There are few complaints more distressing than ozæna, which, leaving the patient, as it does, sufficiently well to perform all the ordinary duties of life, is yet a continual source of misery to him—a veritable thorn in the flesh. The blocking up of the nostrils and consequent hindrance to free breathing, the alteration of the voice, the constant discharge of blood and matter and mucus, and hardened inspissated crusts, and, above all, the loathsome smell which is an inevitable concomitant of the disease, render the patient a burden to himself and a nuisance to his friends. A very great boon was conferred on such sufferers, by the discovery, made by Weber of Leipzig some forty years ago, that when a column of water is passed along one nostril, the moment it impinges on the soft palate, it causes that structure to rise upwards and completely shut off the nasal from the pharyngeal cavity, thus compelling the fluid to pass round the posterior edge of the nasal septum and emerge by the other nostril.

Another German professor at Halle, also named Weber, was the first to carry the principle into practice, and, in 1864, two articles upon the subject, by Dr. Thudichum, appeared in the Lancet, describing an apparatus which he had invented, and which has since gone by his name.

It consists of a heavily-weighted stand, having attached to it, by means of a movable arm, a glass jar, which contains the fluid to be employed. Connected with the bottom of this jar is a flexible tube, fitted at its further extremity with a perforated boxwood nozzle, and provided with a tap to regulate the flow of the liquid. The patient stands or sits with the mouth wide open and the head vertical, not thrown back, as he naturally inclines to do at the first impulse. The nozzle is fitted pretty tightly into one nostril, the tap opened, and presently a continuous stream pours out of the other nostril. The force and volume of the stream are increased by elevating the glass vessel on the shaft of the stand, and opening the tap to its full extent, and *vice versâ*. As this instrument is rather a costly one, a very much simpler variety is made by Mr. Reynolds, of St. Anne Street, Liverpool, consisting merely of a white delf jar with the tube screwed into an aperture close to the bottom. The jar is placed on the top of a table, or any high piece of furniture, and so the necessity for a cumbrous stand is done away with. The price of this instrument places it within the reach of almost any one.

Mr. Christopher Heath, however, having recognised the utility of the instrument, and being anxious to put it into the power even

of the poorest dispensary patient to provide himself with it, has reduced it to the utmost simplicity, by doing away with the jar and the tap altogether, and merely having about seven or eight feet of india-rubber tubing, armed at one end with the nozzle, and at the other with a perforated leaden weight. An ordinary jug, filled with the requisite medicament, is placed, say, on the top of a chest of drawers, and the weighted end of the tube sunk in it. Into the fluid are then paid about a couple of feet of the tubing, which is next pinched between the finger and thumb, close to the margin of the liquid, and being drawn up over the edge of the jug, a syphon is formed, and the water or the saline solution, as the case may be, flows freely along the tube. By pinching the tube, the volume is diminished at pleasure, thus doing away with the necessity of a brass tap, and so the cost of the instrument is reduced to a few shillings. One great advantage of this form is that, being extremely portable, it can be easily carried about by persons who require to travel, but, when there is no such necessity on the part of the patient, the second form is, without doubt, much more convenient to manage.

In the using of the instrument there are one or two points to be attended to. In the first place, it should be seen that the nozzle fits the nostril accurately; and secondly, in the case of children or nervous people, the full stream of fluid should not be turned on at first, as, if this is done, they begin to splutter and cry out, the soft palate falls, the fluid runs into the pharynx, and you have the process to begin over again. The fluid should be allowed to run gently through at first, and then its volume and force increased, either by turning on the cock to its full extent or by elevating the reservoir. Also, having let a sufficient supply of fluid run up one nostril, it is advisable to insert the nozzle into the other, and reverse the current, as, by this means, the hardened crusts which have been detached, are much more easily got quit of.

As was pointed out by Dr. Thudichum, pure cold water is irritating to the mucous membrane of the nostrils, much more so than tepid water, or even than a saline solution, while this last possesses, in a marked degree, the property of dissolving the inspissated mucus, and loosening the hardened crusts. The patient should, therefore, be directed, on first rising in the morning, to run through the nose a pint or two of a solution of common salt in tepid water; about an ounce or more to the pint. This cleanses the mucous membrane, and then either a deodorising or an astringent fluid should follow. The best deodorants are Condy's fluid, the liquor carbonis detergens, and carbolic acid; about a teaspoonful of the two first to a breakfast cup of water is enough to begin with, and about 1 part of

carbolic acid to 120 of water. I tried them all successively in one patient, who gave her verdict in favour of the carbolic acid, as affording her most relief. After persevering for some time with the tepid salt and water, followed by deodorants, the mucous membrane gets clean enough to permit of the action of remedies having a permanently curative object. Of course stimulant astringents are what are indicated. The cheapest and most readily obtained is common alum, of which about 2 drachms to the pint is enough, or the sulphates of zinc and copper (from 10 to 30 grains to the pint) may be used. The practitioner, however, may employ his own favourite remedy, whatever it is, provided he follows Dr. Thudichum's advice. not to make it too strong at first, as he found that when the nasal cavity is filled with fluid, even although it be very aromatic, the sense of smell is entirely obliterated, and, the reflex effects which substances may exercise being thus absent, the application of very potent (and it might thus happen of *too* potent) remedies is borne without much inconvenience.—*Liverpool Med. and Surgical Reports, Oct.* 1868, *p.* 105.

59.—ON A MODE OF TREATING EPISTAXIS.

By W. M. Banks, Esq., Liverpool.

Plugging is a troublesome and disgusting remedy, and not altogether devoid of risk. Cases are recorded where serious disease of the nose has been set up by portions of the plugging having been retained. I should imagine that a stream of some dilute hæmostatic, passed through the nares, would, in many cases, suffice to stop the bleeding, and so obviate the necessity of adopting severer measures. The following case illustrates the value of the spray producer in such circumstances. It occurred in the practice of Dr. Cregeen, of this town, who has very kindly furnished the following particulars.

In September, 1867, Miss E. M., aged 20, began occasionally to spit blood, having for several months previously suffered at intervals from bleedings at the nose, which, however, were so slight that she never even told her parents about them. She spat up the blood on the slightest exertion, but yet her general health was very fair, she did not emaciate, the menstrual function was regular, and stethoscopic examination revealed no evidence of disease of the lungs; in short, it was difficult to say positively where the blood came from. In the early part of this year she again had some severe attacks of epistaxis, which she said nothing about, for fear of being kept in the house and "invalided," but one day in March she had an attack, in which such a quantity of blood was lost that

syncope ensued. The bleeding recurred thrice in the same day, and, the usual remedies proving useless, her medical attendants plugged the nares very thoroughly. Strange to say, even while the plug was in, she vomited blood, which had evidently been swallowed. The plug was removed and all kinds of styptics were employed, together with rest, proper diet, and internal remedies, such as digitalis, aconite, &c., calculated to moderate the force of the circulation, but in vain. For more than a month she had attacks of epistaxis and vomiting, from two to four times every week, till she became utterly exsanguine, as the quantity of blood lost each time was very great. In the end of April she came under Dr. Cregeen's care, who had her removed to New Brighton, in the hope that the change of air might do good. She was by this time quite blanched, her appetite indifferent, the heart extremely irritable, and she herself so weak that she could not be taken out of the carriage to cross the river, and it had to be taken over in the boat with the patient in it. It was now pretty clear that the blood came from somewhere at the back of the tonsils and *upper part of the pharynx behind the soft palate*, and the difficulty was how to reach this. From some remarks of mine Dr. Cregeen was led to employ the spray, using tincture of perchloride of iron as the styptic. It was applied through the nostrils in the usual way, and seemed to do good, as there was no bleeding for three or four days. Then occurred some slight vomiting of blood, and afterwards, on May 14th, during one of Dr. Cregeen's visits, the patient was seized with an attack of epistaxis so severe that it was with difficulty she rallied from it. The pupils were dilated to their utmost and insensible to light, and the patient became slightly delirious, tossing her arms about and muttering incoherently. The blood which ran from the nose was of the colour of sherry, and so devoid of fibrine that it would hardly coagulate. Dr. Cregeen tried to throw the spray up behind the soft palate, but she could not endure it. It was clear, therefore, that by the usual plan of blowing the spray up one nostril and down the other, the soft palate prevented its reaching the proper place, and, as she could not bear it when applied by the throat, Dr. Cregeen adopted the plan of putting the tube up one nostril, closing both the other nostril and the mouth, and then rapidly blowing in about a drachm and a half of the perchloride of iron with the spray producer. The valve action of the soft palate being thus destroyed, the iron reached the very top of the pharynx and ran down, drenching all the surrounding parts; the patient could feel it running down. This was done every day for a fortnight; she did not lose a drop of blood during that time. Dr. C. then began to dilute the perchloride of iron, when, in a day or two, she began to

hawk up a little blood, and he again resumed the full strength. The spray was continued till July 22nd, and for some time at first it was noticed that whenever it was discontinued the patient felt symptoms of fulness in the head and throat, which always preceded an attack of bleeding. At the end of that time she was well enough to take carriage exercise, and was recovering strength. She accordingly went to Cumberland, having had no hemorrhage for a long time. She quickly recruited there, and has never since had a return of her malady. To the effectual application of the perchloride of iron to the proper place, Dr. Cregeen very justly attributes his patient's recovery, as, previously to this, every possible means had been vainly tried, by several medical men, as well as by himself, to stop the bleedings.

I tried the iron myself in a very bad case of epistaxis, where repeated attacks of bleeding were rapidly exhausting the patient. Being an ignorant obstinate man, he positively refused to be plugged, saying he would rather die. I found the iron here exercised very marked control over the hemorrhage, and, the means of applying it being so simple, the patient's wife was able to give him a dose whenever an attack threatened, and so to cut it short.—*Liverpool Medical and Surgical Reports, Oct.*, 1868, *p.* 111.

60.—ON SOME OF THE DIFFICULTIES AND DANGERS OF TRACHEOTOMY. AND THE BEST MEANS OF OBVIATING THEM.

By Arthur E. Durham, Esq., Assistant Surgeon to, and Lecturer on Anatomy at Guy's Hospital.

The canulas commonly met with in this country are of three kinds, and may be briefly described as follows, it being premised that no canula which is not double is worthy of a moment's consideration. First, The ordinary English canula. This consists of an outer tube, which is complete throughout; and an inner tube, which is so cut away on its convex and concave aspects as to render it capable of being easily passed into and out of the outer tube. The curve of this canula represents about a quarter of a circle. Secondly, The French canula. In this the inner as well as the outer tube is complete. The curvature, as compared with that of the ordinary English canula, represents a smaller segment of a larger circle, or the segment of an ellipse; consequently there is less difficulty about the insertion and withdrawal of the inner tube. Thirdly, The bivalve canula of Dr. Fuller. In this the outer tube is represented by two blades, which may be approximated by the pressure of the finger and thumb so as to facilitate introduction into

the trachea, and are afterwards held apart by the insertion of a complete inner tube, through which respiration is maintained.

Without entering into any full discussion of the comparative merits or demerits of the different forms of canula, I would simply state my opinion that the bivalve canula is by far the most objectionable and dangerous. I refer to this especially, because there appears to be a disposition among writers to recommend, and among practical surgeons to use, this form of canula on account of its supposed facility of introduction. Those who have experience of its use, say nothing else in its favour.

Apart from their liability to cause ulceration, the canulas in ordinary use have various faults and defects, which may give rise to much trouble. Sometimes the tube is too long, in which case it presses against the posterior wall of the trachea, and is often ejected. Sometimes it is too short, and cannot be retained unless the plate is deeply buried in the wound.

I have recently devised a form of canula (figured below) which I venture to believe is, in several respects, an improvement upon any hitherto made known. The chief points of originality are in the shape of the canula, and the arrangement by which it is capable of being readily adjusted to the depth at which the trachea may be found to lie. But both of these are, I think points of considerable importance.

Fig. 1 represents the outer tube, which is intended to pass straight back into the trachea, and then to turn downwards in such a way that its extremity shall lie in the middle of the trachea, and its edges shall not unduly press against the mucous membrane. The straight portion of the tube A slides backwards and forwards in the collar B, but can be fixed at any point by means of the screw C. The portion of the tube in the wound may thus be regulated in length according to the depth at which the trachea is situated. The projection of the end of the tube beyond the collar is by no means disadvantageous. It renders expelled mucus, &c., less likely to be drawn in again by the next inspiration. The collar B is attached to the small plate D, which is connected with the neck plate E by means of two alar processes passing under little wire arches on E in such a manner as to permit a certain amount of motion in various directions. The tube is thus enabled to accommodate itself during various movements and changes in relative position of the trachea and superficial parts of the neck. The plate E is to be secured in its place in the usual manner. Fig. 2 represents the inner tube, the peculiarity of which is, that the distal portion consists of several small pieces jointed together, somewhat in "lobster-tail" fashion. The adoption of this construction is necessary to enable the tube to pass along the straight portion of the

outer tube, and then to curve down and fit into the perpendicular portion. This inner tube is so long as to project somewhat beyond the extremity of the outer tube—a very essential point.

Fig. 1.

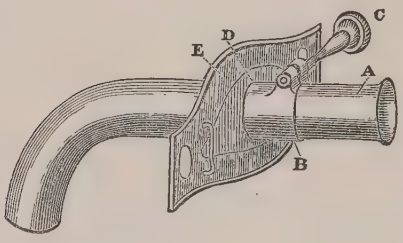


Fig. 2.

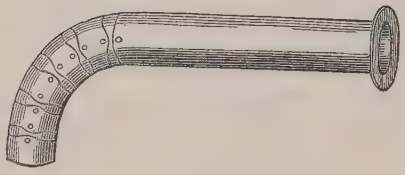


Fig. 3.

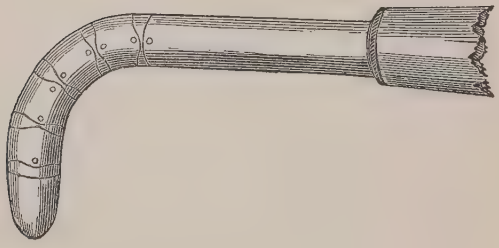


Fig. 3 represents the blunt-pointed pilot trocar upon which the outer tube (fig. 1) is mounted, in order that it may be passed into the trachea. The handle is indicated cut off short. I would here remark that the use of a pilot trocar renders the introduction of a cylindrical tube very easy, far more easy than

the introduction of a bivalve canula; and the operation is simpler than when a dilator is employed, as recommended by Trousseau. I do not think that the pilot trocar is generally known. It certainly deserves to be universally adopted. The introduction of a cylindrical tube without the pilot must be a matter of very great difficulty. A sharp-pointed trocar is very dangerous, and should never be used. I cannot but hope that the adoption of some such modifications in the form and construction of the instrument as those I have thus suggested may aid in diminishing those dangers of tracheotomy which arise from ulceration produced by the canula. Canulas and trocars, such as those described, are made of various sizes by Messrs. Mayer and Meltzer.

Third, with regard to *the danger of broncho-pneumonia caused by the inspiration of unwarmed, unmoistened air.* The means by which this danger may be to a certain extent avoided are obvious enough, and should be duly provided in every case of tracheotomy. Such means consist in keeping the atmosphere of the room warm and moist, and in placing over the neck of the patient, when practicable, a small light cradle, on which two or three layers of moistened muslin are lightly placed.

Want of space prevents me from discussing the several classes of cases in which tracheotomy fails to save life, although it cannot be charged with causing death. The most frequent causes of such failure are, first, procrastination of the operation until the last moment; secondly, needless delay during the operation; and thirdly, want of perseverance in the after-treatment.

With regard to the last mentioned cause of failure, I would simply say that I know from my own observation and experience that it is very common. It cannot be too constantly borne in mind that the performance of tracheotomy is like the first charge in a great battle; it may be to all appearance triumphant in its immediate effect, but it is rarely decisive in its result. The battle has to be fought out to the end; and any relaxation of vigilance, any want of energy or perseverance, any sign of giving way, is sure to be taken advantage of the enemy.

The failure of tracheotomy from needless delay during the operation ought to be much more rare than it is. I cannot but think that such failure is often due to the method of operating ordinarily adopted. I therefore venture to describe and recommend the method which in my experience has proved alike sure, speedy, and safe.

Many surgical writers of eminence advise that in every case a deliberate dissection should be made down to the trachea, the various tissues being cut or torn through layer by layer and carefully hooked aside, and that the operator should pause from

time to time to arrest any hemorrhage that may occur, however slight it be. Now such a process is all very well, and perhaps may be advantageously adopted when time is of no consequence, and skilled assistants are at hand. But it very often happens that there is not a minute to be lost, and the surgeon has to rely upon himself alone. In such case a deliberate dissection cannot be made, and unadroit attempts to hook aside the divided structures are more likely to embarrass than to aid the operator. The natural laxity of the tissues of the neck is increased by their division; and the various parts become capable of being moved so easily and to such an extent, that there is great danger of their being pulled more or less out of position. Thus the normal relations of parts may be so disturbed as to mislead the surgeon, or at any rate to hinder the accomplishment of his purpose. It has happened within my knowledge that the cervical vertebræ have been safely reached before the trachea has been found. In this case the trachea on the one side and the large vessels on the other were held scrupulously apart by the assistants who had charge of the retractors. Mr. Marsh alludes to a similar case. The method of operating which I venture to advocate is as follows.

First, Chloroform having been administered, or not, according to circumstances, the patient is put into proper position. A good pillow is placed under the shoulders and upper part of the chest. The head is thrown well back. It must not be supported, nor propped forward by any pillow. The chin is drawn up. The shoulders are drawn downwards—in the adult by traction upon the upper extremities, in the child by means of a towel or shawl placed behind the shoulders—then carried on each side over the acromion and upper extremity, crossed over the thorax, and securely tied behind and below. The head is placed perfectly straight and firmly held in that position until the operation is completed. The middle points of the upper piece of the sternum, the thyroid cartilage, and the lower jaw give the line. By repeated observation I am convinced that, when the patient is in the position described, these points can be readily recognised even in very young children. A small pad may sometimes be advantageously placed under the nape of the neck in such a way as to maintain or increase as far as practicable the anterior convexity of the cervical spine. I have been thus particular in describing the proper position of the patient, because upon the absolute maintenance of such position the facility with which the operation may be performed very greatly depends.

Secondly, The operator, standing upon the right side of the patient, selects the spot at which he intends to open the trachea, and makes a careful preliminary examination of the parts. Then placing the forefinger of his left hand on one side of the trachea

and the thumb on the other, so as to include between them the spot at which the trachea is to be opened, he makes uniform, steady, deep pressure, until he is able distinctly to feel the pulsation of both carotid arteries. The security of the great vessels is thus ensured, and the surgeon has the satisfaction of feeling that the trachea is safely and firmly held between his finger and thumb. Moreover the skin and superficial tissues are rendered tense, and prevented from moving downwards with the knife, as from their great elasticity and mobility they otherwise might do. The finger and thumb thus placed are not to be moved until the trachea is reached.

Thirdly, By a succession of careful incisions strictly in the middle line the surgeon confidently cuts down on to the trachea. The forefinger of the right hand may from time to time be passed into the wound "to make assurance doubly sure" that there is no important vessel in the way. The pressure of the finger and thumb on either side causes the wound to gape, and the trachea to advance. When the trachea is reached, it may either be opened at once by the knife guarded, lancet-like, to within a quarter or a third of an inch from the point by the fore-finger of the hand which holds it; or a sharp hook may be used to seize the trachea, and hold it firmly until the opening is made.

Fourthly, When the opening into the trachea is satisfactorily made (and there is no mistaking the moment at which the trachea has been opened), the outer tube, mounted on the blunt-pointed pilot trocar, and already armed with tapes for fixing, is introduced. If the pilot trocar is used, there is rarely any difficulty about this part of the operation; but, as I have already said, the introduction of an open-ended tube must be difficult in the extreme. If the surgeon should not possess a trocar, the tube may be mounted upon an elastic catheter or bougie, as a substitute. But the long firm handle of the trocar renders the manipulation of this instrument much more easy. The withdrawal of the trocar, the tube being held in position, enables the surgeon at once to judge whether the trachea has been properly entered or not.

As a rule, the pressure of the finger and thumb serves to a great extent, if not entirely, to prevent venous hemorrhage during the conduct of the operation. If, however, such hemorrhage should occur to any alarming extent, it is better to introduce the index finger of the left hand into the wound, and apply it firmly to the front of the trachea before the opening is made. The opening, when made, is easily closed at once by the point of the finger, so as to prevent the entrance of blood. And the finger-nail placed on the edge of the opening serves as a guide to the introduction of the trocar.

By the method thus described the trachea is firmly fixed throughout the operation, and the violent convulsive up-and down movements which commonly give rise to so much difficulty and embarrassment are effectually prevented. The whole operation from the first use of the knife to the insertion of the canula occupies so brief a period of time, that the necessary interference with respiration need give rise to no anxiety.

I wish it to be distinctly understood that I do not suggest this method on theoretical grounds, but I recommend it because I have tested it and found it good. I have operated in this way in fifteen cases, and in no instance have I had the slightest reason to regret the course pursued. I cannot say the same of other methods which I have tried or seen tried by others.

I have thus endeavoured to show that tracheotomy is not necessarily the fatal operation it is sometimes represented to be; and I have also endeavoured to point out the means by which, so far as I am able to judge, some of the chief difficulties and dangers really attending it may be best encountered and overcome.—*Practitioner, April* 1869, *p.* 221.

61.—CASE OF TRACHEOTOMY.

By T. R. Jessop, Esq., Lecturer on Physiology at the Leeds School of Medicine, Surgeon to the Leeds Public Dispensary.

[The following case occurred during Mr. Jessop's house-surgeoncy at the Leeds General Infirmary.]

Case.—Mary M'G., aged 14, a street-dancer and stilt-walker, from Manchester, was admitted into the Leeds General Infirmary, under the care of the late Mr. Samuel Smith, on the 30th of May, 1862, in consequence of hypertrophy of the thyroid body, attended by some dyspnœa which at times assumed a somewhat violent character, and was then accompanied by noisy inspiration. A careful examination failed to elicit any other cause for the paroxysms of difficult breathing than the enlargement of the thyroid body. The hypertrophy, though marked, was not excessive, was of the usual simple character, unaccompanied by exopthalmos or heart-murmur, involved all three lobes equally, and the middle one lay apparently in its usual position across the front of the upper part of the trachea. The disease had commenced about a year before her admission, and had steadily advanced, the difficulty of breathing keeping pace with the enlargement of the neck.

During the first fortnight of her stay in the hospital an iodine lotion was applied to the neck, and the tincture of iodine given internally, without any apparent result. The size of the thyroid was undiminished, and the difficulty of inspiration

remained the same. As the attacks had never been of an alarming character, no extraordinary precautions were taken.

About half-past six on the morning of June 13th, exactly a fortnight after the patient's admission, the night nurse came to my room—in compliance with my requirement, that every nurse should inform me when any of her patients died, whether expectedly or unexpectedly—and, rousing me, said: "Mary M'G. has just died in a fit, Sir." I lost no time in reaching the ward in which the patient was. My bedroom, however, was at one end of the building and the patient was at the opposite end, and on the floor above me. On arriving at the bedside, I found the girl duly "laid out," and surrounded by the large screen, which was made use of for isolating the dead. The face was livid, and no sign of life was manifest. Feeling certain that the patient must have been suffocated, I ran to the operation room, which is situated in the centre of the building, and on the floor above that on which the patient lay, procured the necessary instruments, ran back to the ward, had the body lifted from the bed on the floor, which had been made there owing to the crowded state of the house, and placed on another patient's bed; and I then opened the trachea. The depth of the wound was so great that the ordinary tubes were found to be of no use. I therefore held the wound open by means of a pair of long forceps introduced, while assistants, who had in the meantime been summoned, performed the movements for artificial respiration, as directed by Dr. Marshall Hall. Air entered, and was expelled freely with each set of movements. The body remained quite warm, and every now and then, at very long intervals of many minutes, I thought I could detect a slight fluttering of the heart; but, with these exceptions, no sign of life was manifested until a few minutes before 8 o'clock—nearly an hour and a half after I was called, and, according to the nurse's statement, fully an hour and three quarters after the girl was supposed to have died,—when a single distinct and convulsive inspiration was observed. Shortly, in from forty to sixty seconds, another followed; and subsequently breathing became by slow degrees established, and with it pulsation at the heart and wrist. The artificial respiration was continued until about 8.30, when it was no longer needed. The patient remained perfectly unconscious all that day and the next, and became able to recognize those around her only at about the end of forty-eight hours.

As soon as the immediate danger was over, a silversmith was directed to make a special tube, of twice the ordinary length; and in the mean time the wound was kept open by an assistant with a pair of long forceps. Her recovery was uninterrupted. At the end of a week, without any further treatment having been

adopted, the enlargement of the thyroid had diminished very considerably. In three weeks she sat up, and at the end of two months the thyroid body was only slightly larger than natural; and yet the trachea was so deep that the long special canula alone would reach it.

When the canula was removed to be cleaned, the opening contracted so rapidly that it was found necessary to have a second tube made, in order that it might be introduced immediately on the withdrawal of the first. On August 30th, the introduction of the clean canula having been neglected on the withdrawal of the obstructed one, the wound was found to have contracted so much that it became necessary to enlarge it with a bistoury before the tube could be reintroduced. In consequence of the difficulty experienced each time the tube was cleaned, it became necessary that the girl should be kept in the hospital; and accordingly she was hired as a cleaner, the duties of which office she continued to perform until the end of 1865, when, after a sojourn of three years and a half, she left the hospital, still wearing the tube. I often tried to induce her to give up the use of the tube, but in vain, as the distress of breathing invariably recurred when in a very few minutes the opening narrowed, and then it became a matter of some difficulty to reintroduce the tube. There was no appearance of disease on laryngoscopic examination, and on closing the orifice of the tube the patient could speak with a bass voice and breathe with tolerable facility.

I have two suggestions to offer for the improvement of tracheotomy tubes as ordinarily constructed. A remark commonly made after performing the operation is, "How much deeper the trachea is than it seems to be!" We may go further with our reflections, and add, "How much deeper the trachea is in the living than in the dead!" In private practice, where the patient resides at a distance from the surgeon, it is no unusual circumstance to be told, on making the morning visit, that the patient, especially if it be a child, has died after a violent fit of coughing during the night. And if the throat be examined, it will not unfrequently be found that the tube has been forced out of the trachea, and is lying irregularly in the wound; that, in fact, the child has died suffocated, because the tube was only just long enough to reach the trachea, and has therefore become readily displaced during the act of coughing, or in swallowing. The ordinary tracheotomy tubes would seem to be made to correspond with the apparent, and not with the actual depth of the trachea —to reach the trachea of the dead and not of the living. Those I am in the habit of using are nearly half as long again as the ordinary tubes, and I find them very advantageous. I had

them made after losing two children in the way I have described above.

My second suggestion—the principle of which is, I believe, recognised, but is not sufficiently appreciated by instrument makers,—is, that the two blades of the outer canula should be made so that they lie in *close apposition* at their distal extremities, and are separated only by the introduction between them of the inner canula.

By the adoption of this means the most difficult step in the operation of tracheotomy—viz., the introduction of the canula through the slit in the trachea will be much facilitated.—*Lancet, April* 3 *and* 10, 1869, *pp.* 458, 492.

62.—THE ÆSTHETIC TREATMENT OF HARE-LIP. WITH A DESCRIPTION OF A NEW OPERATION FOR THE MORE SCIENTIFIC REMEDY OF THIS DEFORMITY.

By Dr. Maurice Henry Collis, Surgeon to the Meath Hospital, and County Dublin Infirmary, &c.

The natural condition of the upper lip in its perfect state is as follows:—

Its free margin has the waved outline to which the name of "Cupid's Bow" is given. Its depth is greatest in the centre Its margin is connected with the inner margin of each nostril by a curved line. These curves, and those of the free margin, correspond, or have a relation to one another; thus, if the lip be full and freely curved, the lines which pass up to the nostrils will likewise be freely curved, and will include a larger portion of lip than when the margin of the lip is almost straight. In this latter case, the lines referred to are also straight or nearly so, The upper lip may, therefore, be fairly divided into a central. and two lateral portions, joined by curved lines.

The fissures of hare-lip always correspond to this division.

In the double hare-lip, the fissures cut off the central portion along the curved lines referred to. In the single hare-lip, the central portion remains attached to one side and detached from the other, the curved line being still traceable on the larger portion.

These are anatomical facts of some importance, both in a surgical and *æsthetic* point of view. Almost from the time of my student days I have considered the ordinary operation for hare-lip to be deficient in a due regard to the natural condition of parts, and I have followed with interest many efforts made by distinguished surgeons to improve it. Let me first state wherein it is deficient.

The ordinary directions are—first, to divide the frena, true

and false, to the fullest extent. Secondly, with knife or scissors to pare the edges, cutting away the rounded corners freely. Some surgeons make these incisions straight, others make them curved with the concavities facing each other.

The evil of dividing the true frenum is that the lip is thrown out of gear, and one of the best means of bringing the distorted nostril into its proper place is sacrificed.

The incisions, whether straight or concave, must result in a straight cicatrix, whereas there can be no doubt that the cicatrix ought, if possible, to follow the curved line which runs, in the natural condition, from the nostril to the margin of the lip. Further, the loss of substance along the margin of the lip is considerable by this method. Hence the resulting lip has a tight margin, which is drawn up by the gradual contraction of the cicatrix, so that ultimately its outline, instead of a graceful wavy line is made up of two straight lines, which at their point of junction allow a tooth to be seen. The contraction of the cicatrix not only tucks up the lip at that point, but it also renders the lip thin along the line of cicatrix, whereas it ought to be thicker and more full along that line than elsewhere. In fact, in place of a curved ridge, we got by the ordinary operation a short depressed straight line, with a lip tucked up in or near the centre.

Such are my objections to the common operation.

One of these is remedied by the operation known as Malgaigne's or Sédillot's, which I learned twenty-one years ago from a fine old English surgeon, the late Samuel Smith, of Leeds. He told me then that he had devised it some twenty or thirty years previously. Whether he ever published it I do not know. This improvement consists in reserving the lower portion of the parings at each side, and turning them downwards so as to form a prominence along the margin. This manifest improvement gave me the first idea of my operation. For some years I was content with it, but by degrees I have added one thing and another to it until I have brought it to a point of perfection, that I am not afraid to challenge attention to.

The rules for my operation are:—

1st. Never to interfere with the true frenum. It is not only unnecessary to divide it, but most pernicious.

2nd. Freely to divide all false frena, and if the alar cartilage is misplaced, let the incisions separate it freely so that it may be fairly drawn into its proper place.

3rd. Never to attempt to close the lip so long as the intermaxillary bone is misplaced to any extent.

4th. To preserve and utilize all the parings. They are all wanted, as they all have their proper place; to this point I will revert at length.

5th. To use interrupted sutures, and discard all pins or needles as far as possible.

6th. To leave the line of union exposed, using no dressings or plasters for some days.

And now to justify these rules :—

1. I never divide the true frenum. Its obvious use is to steady the lip, to prevent muscular action from drawing the centre of the lip away from its proper place. Let any one with his finger or tongue try on his own lip what the uses of the frenum are. The division of the frenum unsteadies the lip, makes it tend to run into a string, and, in many cases, leaves a permanent fistula into the nostril. It is, moreover, quite unnecessary, as the parts can be brought into perfect apposition without meddling with it.

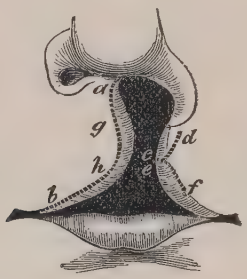
2. I freely divide all adhesions or false frena, and I subcutaneously separate all attachments of the ala nasi to the bone which interfere with the proper formation of the nostril. The advantages of this are so obvious that I need not dilate upon them.

3. Before paring the margins, the intermaxillary bone should be placed exactly in the centre, if not so already. Where there is fissure of the hard palate there is always this displacement. I generally manage this part of the operation by detaching the bone on the sound side by means of a narrow gouge. A strong forceps, with the blades protected with chamois leather, will then force the bone into position. As the nutrient vessels run along the mucous membrane, and chiefly on the inner surface, the gouge is the best instrument for loosening the bone. It may be used freely in this subcutaneous or submucous fashion; in fact, the more freely the bone is loosened the more easy is it to get it into position. The instrument has the advantage of being efficient and simple; no small recommendations now-a-days.

4. I never throw away a particle of the parings. My incisions are made so as to make every fragment of them useful. On one side they are preserved to make the lip thick, and on the other to increase its depth. The method is somewhat complex, but a reference to Fig 1 will make it intelligible. When dealing with single hare-lip, I take the larger portion, that which includes the middle bit, and pare it freely from the nostril round the margin, from *a* to *b*, until the point of the knife comes opposite the frenum. This incision goes through all the tissues of the lip except the mucous membrane. It follows the curved line of the margin of the fissure, and leaves a long wound, which is curved towards the fissure. The flap is left loose, and attached only by mucous membrane. On the other or smaller side of the lip, where we generally find the tissues thin, especially as we ap-

proach the nostril, the treatment is quite different. I transfix the lip at *d*, close to the nostril, and carrying the knife along parallel to the margin, as far as *f*, I detach a moderately broad flap, which I leave adherent above to the ala nasi, and below to the free margin of the lip well beyond or external to the rounded angle at the fissure.

Fig. 1.

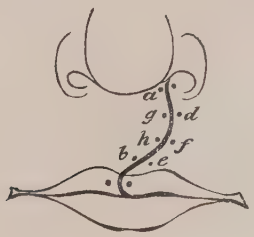


This flap, which (unlike the one at the opposite side) comprises all the tissues of the lip, is now divided into two at its centre (*c e*). I thus get two loose flaps, a superior (*c d*) attached to the ala nasi, and an inferior (*e f*) hanging on to the free margin of the lip. The loose end of the upper flap is turned up so that its raw surface faces the wound in the opposite side of the fissure, and the loose end of the lower flap is similarly turned down. The point *c* is brought up to *a* and fastened there. The point *e* is brought down to *b* and fastened there. I have thus got on the small side of the lip a wound as extensive as that on the larger side. The upper flap completes the outline of the nostril. The lower one supplements the outline of the free margin of the lip. I thus get a lip nearly double in depth what I could possibly have got by the ordinary incisions (Fig. 2). I shall revert to the treatment of double hare-lip further on.

5. I use, as a rule, sutures of horse-hair, as being less cutting than wire and less irritating than silk or thread. Pins, except very fine insect pins, I have discarded. Even these I use but rarely. A well-tied suture holds the parts together with sufficient firmness. It can be removed at any time, whereas the pin must remain until it becomes loosened in its bed by suppuration; hence the mark of a suture is trifling compared with that left by a needle or pin. The spot which requires a pin most frequently is the ala of the nostril. It tends to revert to its old position with more force than the lip, and it often needs the stronger pull of a pin.

I generally insert the upper suture first, then the one close to the line of junction of the red and white, then the two intervening sutures, in the order that seems most suitable in each case. Sometimes I have inserted a suture on the inner or

Fig. 2.



mucous surface of the lip. Sometimes this is not necessary. Generally I put a fine suture just along the free margin to keep the lower flap in its new bed until it contracts adhesions there.

The sutures are removed, one after another, those near the margin first, the upper two last. As to time of removal much will depend on the age of the child, and on the firmness of its flesh. Thus in a strong child a suture may be left three or four days, while in one more delicate it may have to be removed in forty-eight hours. Sutures should never be left long enough to ulcerate.

6. By this treatment of the sutures, plasters and dressings are dispensed with until some days have elapsed. They are applied only when the sutures are removed, and with a view to prevent the lip from thinning. I generally find that all the wound heals by first intention, and the presence of plasters rather interferes with this process, at least so long as the sutures are left. When plasters are used they have to be removed when we wish to inspect the lip, and their removal disturbs the delicate process of union. By leaving the lip uncovered we can watch the progress of the cure, and it is easy to apply a strap at any moment if it be really needed. The use of Hainsby's truss will, in most cases, make it quite unnecessary to use plasters of any kind. Collodion is sometimes useful, but it should be made very thick. The ether in thin collodion acts injuriously on the healing process.

As to the age for operating, I have done so successfully in a child under three weeks, and I have seen others of twice as

many months on whom I refused to operate. The question is entirely one of the strength of the child, and the firmness of its flesh.

With regard to complicated double harelip, the first point to be attended to is, in like manner, the strength of the child, which, as a rule, is far below par. When, by careful feeding, this has been brought up to a proper state, the protruding intermaxillary bone has first to be replaced. It should never, under any circumstance be removed. This, is in fact, so well established an axiom of surgery, that it need not be insisted on. It is not always easy to bring it into its proper site. There are three methods to choose from; one is to separate it completely from all bony attachments, and to leave it for a time pendulous, adherent only to the central portion of the lip. This is the best way when practicable. The second is to take a V-shaped piece out of the vomer. The third is a new method which I have tried, and which has the advantage of helping materially to lessen the gap in the palate. It consists in cutting off an oblique portion of the vomer along with the inter-maxillary bone. Whichever method is adopted, the bone is best left undisturbed for a few days after this stage of the operation. Nothing is more fatal to success in these cases than the effort to do too much at a time. A few drops of ether will sufficiently anesthetize the child to prevent its being frightened by repeated operations; success of the highest kind can only be obtained by doing the operation bit by bit. It is easy no doubt to conclude all at one sitting—but not to conclude all well. I therefore advise that, as a rule, the bone when detached in any of the above methods, should be left undisturbed for a few days before any attempt is made to push it back or retain it in its new position. Yet if it goes back easily, the remainder of the operation may be done at one sitting.

I treat the middle bit of skin as in simple hare-lip, paring its margin in a curved manner, and leaving the parings attached by the mucous membrane; the outer portions are treated exactly as in single hare-lip, and the sutures are practically the same. In double harelip they are best inserted, and tied from below upwards. The amount of the central portion which can be made to contribute to the lip, is never very great, and the strain on the upper portion of lip is often very considerable. In these cases the use of Mr. Hainsby's truss is of the greatest service.

It is surprising how beautifully the flaps, made after my method, fall into and fill up the places intended for them; how naturally the form of the nostrils is restored, and the curves of the lip. The faithful woodcuts of Mr. Oldham show the per-

fection of outline, and the great increase in depth of the lip as contrasted with the results of the old operation.

In conclusion, I recommend this improvement in plastic surgery to the kind consideration of my professional brethren. I am satisfied that when tried it will be found a real advance in operative surgery, and one that all will confess was much needed in this department.—*Dublin Quarterly Journal, May* 1868, *p.* 292.

63.—ON HARE-LIP.

By Haynes Walton, Esq., Surgeon to St. Mary's Hospital.

[The cases referred to in the following paper were all of the single complicated variety, in which were involved the lip, and the upper jaw on one side.]

The first question to be discussed is the period at which an operation should be undertaken for the closure of the lip. My own experience tells me that it should be done as soon as possible after birth—that is, within the month—in all cases in which, like those under consideration, the bone is divided as well as the lip. Except the lip be closed the child cannot nurse, and even fails to take sufficient food in any other way, because it cannot swallow quickly all that is put into the mouth; and emaciation ensues, and renders it less fitted for the operation, and is often the cause of death. Many surgeons are deterred from operating so early from the fear of fatal convulsions; but it is my belief that the liability to such has been greatly over-rated—that their appearance is due to loss of blood, and not to the mere irritation of the operation, and that more lives will be saved by operating a week or two after birth than by doing so some weeks or months later, when the child has all the marked symptoms of starvation, and is therefore unfitted to lose a drop of blood. I have myself operated many times before the child was a month old, and in every instance with perfect success. It has been erroneously supposed that in very young children the flesh is so soft that the pins or sutures readily cut through it. I say, therefore, as soon as the unfortunate child is born, have it fed most carefully and sufficiently long each time, till enough, or nearly enough, milk is consumed, and operate early, and before emaciation sets in. When the lip is united it can suck, or be fed. In those cases in which the lip only is cleft, the operation may be delayed without disadvantage, because the taking of food is not interfered with. In the miserable child lately before us, about two months old, there was so much emaciation that I kept it in the hospital for a fortnight, and had it fed by a clever nurse, and so improved its

condition a little. It seemed scarcely safe to operate on such an ill-nourished subject.

Whether it be better for the health of the child or not to give chloroform is not easy to decide. Sometimes I give it, and sometimes I operate without it; but of this I am certain, that at this early age the surgeon derives no benefit from its administration. The patient is too feeble to offer any resistance.

The lip is the portion of the deformity first to be operated on, and there are three steps or stages to be accomplished. Failure in any of them will be fatal to success. The first to be done is the paring of the edges, whereby it is prepared for adhesion. This procedure is very often improperly executed. The child should be secured for the operation, and the operator should stand in a convenient position. These can be accomplished only by the operator sitting, and holding the head of the infant between his knees, while the rest of the body is supported by an assistant. I operate, as you observed, with a very narrow scalpel. I transfix above, and cut downwards in a curved direction, because when the two curved surfaces are brought together, the free edge of the lip is thrown sufficiently down. When the incisions are made straight in a Λ-shape, the edge of the lip is not natural, but there is a retiring angle, that which generally constitutes so much after-deformity.

The manner of dealing with the hemorrhage is simple. If the coronary arteries be compressed with the fingers, on one cheek by the operator and on the other by the assistant, no blood will be lost, if the operation be quickly done, that can hurt the child. The operation can be proceeded with while such pressure is being made. As soon as the lip is put together, the arteries cease to bleed. Every part of the edge of the fissure must be removed, together with some of the red portion, no matter how extensive may be the incision necessary to accomplish this. Few young surgeons have courage enough to take away a sufficiency. Attention should next be directed to the alveolar process. If there be the slighest projection, the prominence should be brought to the level of the rest, by snipping through the arch, at the spot between the lateral incisor tooth and the canine, with the forceps, and pushing it back. On no account should any part be cut away. The teeth are to be preserved, and the mouth made more perfect by following my plan. In my last case I was able to fill up the gap in the bone, as you saw. The loosening of the lip—that is, the raising of it from the surrounding parts—should now follow, and I do not know how I can impress on you the importance of doing it to the required extent, except by asking you to remember how extensive was my dissection, and telling you that without it there will be frequent failure of union. It must be so separated all

round, even in the direction of the nose, that it will hang loosely, and admit of being transposed so completely that there shall not be the slightest tension when the parts are brought together. You will not forget that the child's nose was fairly separated from the maxillary bones.

The last proceeding is the adjusting of the wound. This little practical fact which I give you will save you much trouble, and benefit your patient. Commence the adaptation from the lowest part. Begin by making the edges below correspond, and all the rest will easily fall into a proper place, no matter what the dissimilarity in the length of the two flaps. You saw how carefully I did this with a soft iron pin. To complete the operation on the outside of the lip, I used two other pins, in all three of them. In securing the pins with the ligatures, I tie each separately, and it does not matter whether this is done with a single round tie, or by twisting the thread in the figure of 8. I generally end the whole by an internal suture near the edge of the lip, to ensure the healing of the mucous membrane. The best result will be got if you follow my steps, even better than the plans of Malgaigne and Langenbeck. The sutures are generally removed too early. Take out one pin at the end of four days, then another each day, and then the stitch. A truss for pushing the cheeks forward is useful in most cases. The parts are kept quiet, and any strain on them is prevented.—*Lancet, Nov.* 21, 1868, *p.* 662.

ALIMENTARY CANAL.

64.—THE CURE OF CLEFT PALATE.

By Thomas Smith, Esq., Assistant-Surgeon St. Bartholomew's Hospital, and Surgeon to the Children's Hospital.

[Hitherto the operation of staphyloraphy has never been successfully performed except at or after fifteen or sixten years of age, because the consent and help of the patient himself is necessary. The plan of systematically dividing those muscles that tend to draw asunder the margins of the cleft, as suggested by Sir William Fergusson has nearly brought the operation to perfection, still the inability to cure the defect at an early age has never yet been got over.]

The advantages of being able to cure cleft palate in childhood will at once be conceded by those who are familiar with the deformity, and the inconveniences it entails. The imperfections of deglutition, taste and smell, and the unnatural thirst, will probably be remedied at whatever period of life the cure of the deformity be effected. But it often happens that the union of

the palate by operation is accomplished too late to do more than slightly improve the defective articulation, though it may cure the nasal resonance of the voice.

A resolute and intelligent adult patient, after a successful operation, may acquire by his own efforts, or with the aid of an instructor, the power of distinct and normal articulation. But in some the difficulty of unlearning an almost life-long habit is well nigh insuperable.

It is probable that were the deformity of cleft palate cured in childhood, before or whilst the power of speech is being acquired, there would be but little difficulty in teaching a child to articulate distinctly.

It is at least certain that the earlier the cure was effected, the less difficulty would the patient have in learning to speak plainly.

The plan which I venture to introduce depends largely for its success on the employment of an instrument whereby the jaws are opened and fixed, the orifice of the mouth is dilated, and the tongue is held down; and this without in any way incommoding the operator, or encroaching on the small space at his command.

By the use of this instrument the patient is rendered perfectly helpless; the palate and fauces are brought plainly into view, and much more room is obtained for the manipulation of instruments than can be gained by the most strenuous voluntary efforts of the patient. Chloroform can and should be used, and thus the operation may be performed with far greater rapidity and precision than when the surgeon is dependent upon the self-control of even the most courageous patient. The instrument in question, which is a species of gag, consists of a tongue-plate for depressing that organ: attached to this plate are two lateral expanding arms of a peculiar shape, which can be opened by a key working on a cog-wheel: these are for dilating the orifice of the mouth; they have teeth plates which act upon the jaws and open them. A strap is made to pass round the back of the neck, to keep the instrument in position.

This gag will be found useful in excision of the tonsils of unruly children, in operations on the pharynx and interior of the mouth. It can be used in operations on the tongue, but if employed for this purpose, it must be turned upside down, *i. e.* the tongue-piece must rest against the roof of the mouth.

I should think it might prove of service in laryngoscopy, and especially in operations on the interior of the larynx when it is important to economise space and secure a steady position.

I may be excused for shortly stating the details and order of operative proceeding that I have found most useful when performing staphyloraphy under chloroform.

It is important that the stomach should be quite empty, and equally so that the patient should be in no degree in want of food, so as to avoid both chloroform sickness on the one hand, and the necessity of taking food soon after the operation on the other.

The patient being under chloroform, in the recumbent position, in front of a window, his head may be supported on a pillow by an assistant standing behind the table. The gag being introduced, closed, and the strap drawn tight, the jaws and lips can be opened to the desired extent, and the instrument may be given into the hands of the assistant who holds the head.

The following is the order of proceeding that seems best adapted to the circumstances of the operation when done under chloroform.

1st. To pare the edges from below upwards.

2nd. To pass the sutures.

3rd. To draw up the palate holding all the sutures in one hand, and with the palate on the stretch to divide, if necessary, the palato-pharyngeus, and subsequently the levator palati; if the palate will not come easily together, two lateral oblique cuts may be made, one on either side above the highest suture, separating the soft from the margin of the hard palate to a small extent.

4th. To sponge out the parts, and tie the sutures beginning at the lowest.

5th. To avoid using the sponge, if possible, until the close of the operation.

Sickness occurring during the operation is an embarrassing circumstance, though by no means an insuperable difficulty. On two occasions I have postponed the operation on observing the child vomit while taking chloroform. On four occasions I have satisfactorily completed the operation notwithstanding the sickness.

The paring the edges of the fissure from below is important to avoid being embarrassed by the flow of blood from above. It is well to postpone the division of the muscles until late in the operation for the same reason. By drawing the palate forwards by means of the sutures the muscles which prevent the approximation of the fissure are at once appreciated, and by thus putting them on the stretch their division is facilitated.

The use of the sponge to the palate, as is well known, increases the amount of tonsillar secretion, and is apt to excite vomiting. If the steps of the operation be done in the order above described, its use is seldom required until the last stage.

The material that I have found best adapted for sutures for the soft palate in the young, is *fine fishing gut*, if there be any tension on the suture; while *horsehair* has answered best for the

lower part of the velum and uvula, or in any case where the sides of the cleft come easily together. Both these substances, if soaked for a few minutes in water, will become sufficiently supple for use. They have the advantage of being quite as unirritating to the tissues as silver wire; while being softer they cause less pain during the movements of deglutition; they do not abrade the tongue, and, unlike wire, they can be removed without giving pain to the patient, or disturbing in any way the newly united soft parts.

In fastening both gut and horsehair sutures, a third knot should be added to the ordinary double knot usually tied; this is a necessary precaution to be secure against slipping.

I have tried, with good result, the clamping down the suture with a perforated shot in lieu of tying: this is apt to cut the suture, unless a small glass bead be threaded on the sutures and passed down in front of the shot.

In regard to the unirritating nature of both gut and horsehair when introduced into the tissues, it may be worth mentioning, that in a little girl, aged nine, I removed the sutures more than a month after they were introduced; and at that time the wound was perfectly and soundly cicatrised, the sutures appearing to cause no sort of inconvenience or irritation.

With a view to simplify and expedite the performance of the operation I have found it convenient to dispense with the silk threads generally used for drawing the permanent sutures into position, and, instead, to pass the gut or horsehair at once through both sides of the cleft palate.

This can be done by employing a fine and rather sharply curved tubular needle, or by using a needle in a handle bent at nearly a right angle, with an eye near the point. One can imagine that the width of the cleft might be so considerable as to prevent the passing of the sutures in the manner described, but when practicable, much time and trouble may be saved by the adoption of the plan.

In order to adapt the needles to the small dimensions and delicate structure of the soft palate in children, I have had them flattened laterally, instead of on the concave and convex aspect, as is usual in curved needles. This allows of the needle being made much finer without any loss of strength at the curve.

It is advisable in operating on children that forceps should be sparingly used to the margins of the palate. They were, therefore, only employed in passing the first or lowest suture. When this had been adjusted, it was used to draw the palate forwards, so as to bring the free edges somewhat together and within easy reach of the needle for passing the next suture. Thus, in turn, each suture was used to assist in adjusting the one next above

it; this plan saves much trouble and avoids bruising the margins of the cleft.

In every case the principles recommended by Sir W. Fergusson have been carried out, though the plan used for dividing the muscles has been that practised by Mr. Pollock. That is, the levator palati has either been divided (or at all events its division has been attempted) through a puncture in front of the soft palate, the palato-pharyngeus has usually been notched and occasionally the palato-glossus. Where the soft parts were very scanty, and the tension considerable, oblique lateral cuts have been made at the upper angle of the fissure, separating the soft palate from its attachment to the bones for a small extent.

The patients operated upon have been allowed a liberal supply of wine and fluid nourishment after the operation, and have not been confined to their beds.—*Medico-Chirurgical Transactions, Vol.* 51, 1868, *p.* 82.

65.—ON THE LOCAL TREATMENT OF DISEASES OF THE THROAT.

By W. M. Banks, Esq., Liverpool.

The affections of the throat most commonly met with are, speaking very roughly and generally, as follows:—(1) Ulceration of the larynx either of a syphilitic or of a tubercular origin; (2) chronic follicular disease of the pharyngeal mucous membrane associated with more or less hoarseness and pain in speaking, known as *dysphonia clericorum;* (3) aphonia, or loss of voice, which when merely temporary is only the result of congestion of the mucous membrane of the vocal cords after a bad cold or a sore throat, but when permanent generally proceeds from defective action of the laryngeal muscle. This defective action is due, either to some distinct paralysis of the inferior laryngeal nerve, or to extreme general debility. Of course, there are many other affections, which come under the notice of the specialist, but these are the most commonly met with in the general run of practice.

[There have been many plans suggested in order to bring our remedies in contact with the affected air-passages. Inhalation of the steam of warm water impregnated with the medicinal agent was the first idea. Afterwards the use of spray by means of injections was tried, and with success, especially the plan invented by Dr. Bergson, of Berlin, of two glass tubes with capilary points placed at right angles to each other.]

Last year, Dr. Adams, of Glasgow, most ingeniously contrived

to simplify an apparatus, just as Mr. Heath has done with Thudichum's machine, and has reduced its price to a matter of five shillings, rendering it at the same time much smaller and more easy to work.

The instrument, which is made of block tin, and is only about five inches in height, resembles very much a common lamp. It consists of a tubular boiler with an opening into which the water is poured, and which is fitted with a cork which acts quite efficiently as a safety valve, since, should the pressure of the steam prove excessive, it will certainly be blown out before the boiler will burst. From the position of the opening only the proper quantity of water can be poured into the boiler. The lamp being lit, steam is generated in the upper part of the boiler, and rushing through the upper tube which leads from the boiler, it sucks up the medicated fluid from the bottle along the lower tube, and carries it along with it in the shape of a warm soothing mist. The advantage of the tubular boiler is, that the steam is generated quicker, and a fuller supply kept up, while it is at the same time super-heated and dried. In simplicity and ease of management this instrument, if steam is desiderated, cannot be surpassed, and it may be safely intrusted to the care of the most inexperienced nurse or servant without fear of danger. Dr. Adams's instrument is capable of being used in all diseases of the throat and larynx, but my own impression is that the steam does best when the bronchi are to be reached. Cases of gangrene of the lung and fœtid bronchorrhea can be deprived of much of their loathsome nature by this means ; and in many cases of chronic bronchitis and phthisis, when the hacking night cough deprives the patient of his sleep, a most soothing effect can be obtained by a good inhalation, before bedtime, of some balsamic or narcotic tincture.

Within the last eighteen months, since the rise of the great sulphurous acid mania, not only the profession, but the general public, have become familiar with the instrument which goes by the name of "*The* Spray-producer," and which consists of a modification, by Winterich, of Bergson's tubes, having attached to them Dr. Andrew Clark's hand-ball, by which air is employed as the atomising medium. Messrs. Mayer and Meltzer, of Great Portland-street, London, keep the tubes with points constructed to direct the jet of spray either directly backwards against the pharynx, or upwards behind the soft palate, or downwards to the larynx. They also have a smaller tube, intended for the nostrils, the delicate point of which being protected by a small vulcanite ball prevents the patient doing it or himself any harm. Last February, in the Medical Times, a new form was made known to the public by Dr. Brakenridge, which

is intended to be portable, and capable of being carried in the pocket without fear of breakage. The bottle is dispensed with, and the lower tube fulfils the office of a reservoir. The instrument, enclosed in a neatly fitting leather case, is about four inches in length.

The value of the spray-producer is so self-apparent as to account at once for its popularity, and one of its principal merits is, that it can be worked by anybody after a single trial. Very few people, as a rule, can swab out the larynx satisfactorily, and patients, after a little while, are apt to get tired of the trouble of fixing up the larger instruments in which steam is the atomising agent; but this is small, portable, easily managed, and ready at a moment's notice. Of its applicability to cases of disease of the nasal mucous membrane I have already spoken, and its value in chronic throat affections I have thoroughly satisfied myself of; but I am also sure that we have in it a most efficacious weapon in combating such serious acute affections as putrid sore throat, scarlatinal cynanche, and diphtheria itself. Hitherto one of the greatest desiderata has been to obtain some means of getting at the disease after the swelling of the parts has rendered useless our attempts by the ordinary methods of gargling, or swabbing, or touching with solid caustics, while the patient has become too exhausted to undergo the fatigue of inhalation. In such a case, if we can only introduce the nozzle into the patient's mouth and get him to draw down the disinfecting spray as it is poured forth from the instrument, we may not be too late to check the advance of disease. In the August number of the new journal, "The Practitioner," Dr. Beigel, whose labours have tended greatly to popularise the use of atomised fluids by inhalation, has drawn attention to this very point, and strongly advises the use of spray in croup and diphtheria. As to the remedies to be employed, I need say little or nothing, they depend so much on the special case to be treated. As astringents, alum, nitrate of silver, and the glycerine of tannic acid, are in universal use; and as antiseptics, iodine, carbolic acid, and though last, not least, the much-talked-of sulphurous acid, are probably the best. There has been a good deal of writing lately upon the value of iodine inhalation in diphtheria, and I think that the compound of iodine and carbolic acid, which I referred to a short time ago, will be found a very excellent remedy. Dr. Beigel, in the paper just referred to, gives the preference to lime water (about 1 to 30 of water), (to which is ascribed the power of dissolving the pseudo-membranes of croup and diphtheria), and repeats the inhalations every two hours.—*Liverpool Medical and Surgical Reports, Oct.* 1868, *p.* 116.

66.—ON THE USE OF COFFEE IN STRANGULATED HERNIA.

We believe that all our English writers on Surgery totally ignore the value of this remedy, trusting to what is no doubt a far more potent therapeutic agent—namely, chloroform. But there are cases where, for certain reasons, chloroform should if possible be avoided ; and these are just the cases in which the other old remedies, such as the hot bath and tobacco enemata, are likewise dangerous. If a remedy could be found which would act in reducing a hernial obstruction without exciting dangerous symptoms of depression, it would obviously be a great boon to surgeons. Dr. Marchand, in an elaborate article on the therapeutic action of coffee, has collected a sufficient number of cases of strangulated hernia in which this simple remedy has proved successful, to warrant us in recommending its further trial. It appears that in the Havana coffee has from time immemorial been employed for the reduction of hernias. A French surgeon, Durand (de Batignolles), when residing there, saw it several times applied with success, and on his return home in 1857, he tried the remedy in France. A hernia of thirteen years' standing became strangulated, and all ordinary means, as the taxis, ice, draughts containing belladonna, &c., proving ineffectual, an operation was decided on, when M. Durand declared that he knew a sovereign remedy, which he begged to be allowed to try. His offer being accepted, he ordered 250 grammes (about half a pound) of powdered roasted coffee to be added to twelve cupfuls of boiling water, and of this a cup was to be taken every quarter of an hour till eight cups were taken, after which half an hour was to elapse between each dose. After the fifth cup the patient felt gurgling in the tumour, and the ninth cup was followed by the spontaneous reduction of the tumour. This case was published by Triger in the Gaz. des Hôpit. for May, 1857, and, as might be expected, not only excited *un vif étonnement*, but led to further trials. In the following year (1858) Meyer reported the case of a man, aged 62, in whom there was a spontaneous reduction of hernia after the sixth cup ; Czernicki reported a similar case which yielded to the fourth cup ; and Barasent described the case of a woman to whom, after twenty-four hours' vomiting he gave coffee, and whose hernia yielded to the fourth cup.

In 1859, Rouzier-Jolly, of Clermont-l' Hérault, published two cases in which he combined the coffee treatment with the local application of belladonna ointment. Although there was intestinal hemorrhage, in both these cases, from, as he thinks, the use of too large doses, he adds that we should not, on account of such accidents, renounce a remedy which is "as active as it

is successful." In the same year we are told that "Sammert en Angleterre" reported another successful case. We suspect that some evil has befallen our compatriot's name in the hands of the French author.

In 1860, Paultrier, and in 1861, Lamare-Piquot (of Honfleur), and Cellarius, adduced additional evidence of the value of this remedy; but the two last-named writers differ as to the mode of action. The former holds that it acts by occasioning *decongestion* of the strangulated part of the intestine, while the latter thinks that it acts by exciting the contraction of the intestinal fibres, which thus gradually liberates the strangulated portion.

[We refer our readers to an article by Dr. Sammert, of Malta, on this subject. Retrospect, Vol. xxxvii, p. 199.]—*Medical Times and Gazette, Jan.* 2, 1869, *p.* 18.

67.—ON OPENING THE SAC IN CASES OF STRANGULATED HERNIA.

From a Report on the Practice at St. George's Hospital.

The practice of opening the sac in operating for strangulated hernia is much more frequently adopted at some hospitals than at others. At St. George's Hospital it is generally done, and the operation without opening the sac forms the exception to the rule. One reason given for this practice is, that the condition of the bowel can in that way be ascertained; but a more important reason, and one lately much insisted upon by Mr. Henry Lee, is, that the fluid contents of the sac (if this be not opened) are returned together with the intestine into the abdomen. These contents consist often of lymph, blood, and serum, in which various alterations are taking place. Now it is well known that decomposing fluids are absorbed with great rapidity from a serous surface, especially if that surface be large. If any bloody fluid or lymph be contained in a hernial sac, and that sac be not opened, then when the bowel is returned the fluid is returned with it into the peritoneal cavity. This fluid, mixed perhaps with decomposing blood, is looked upon by some as a fertile source of peritonitis, and great care is taken to remove it after the sac is opened in the operation for strangulated hernia. In two cases which occurred in St. George's Hospital two weeks ago these facts were particularly dwelt upon. In one of these, a patient seventy-five years of age, when the sac was opened a net-work of white lymph was seen forming a loose kind of inner sac; and in the other case, in which the taxis had been firmly applied, the sac contained a quantity of bloody fluid. The fluid contents of the sac were carefully removed in both these instances before the hernia was reduced, and the patients are both doing well.—*Lancet, Jan.* 23, 1869, *p.* 120.

68.—ON THE USE OF THE ETHER-SPRAY IN OPERATIONS ABOUT THE ANUS, AND ESPECIALLY IN THE TREATMENT OF HEMORRHOIDS.

By Holmes Coote, Esq., Surgeon to St. Bartholomew's Hospital, and Lecturer on Surgery.

External piles are commonly nothing more than some of the veins at the lower part of the rectum considerably enlarged, and covered partly by mucous membrane and partly by the thin integument near the anus. In order to effect their removal, there is no need for so painful an operation as that of strangulation by the ligature, nor need they be burnt with strong acids, nor the heated iron. Let the surgeon satisfy himself by digital examination that there are no internal venous enlargements, and he may then at once remove these swellings by the scissors.

But in order to effect this without pain the ether-spray must be used, when in a few seconds the hemorrhoid becomes white, tough, and completely congealed. I was lately requested to examine a gentleman suffering from piles. He was in great pain, and on examination I found the margin of the anus surrounded by such swellings in a state of great tension and heat. So anxious did he seem for relief, that I punctured the most tense and prominent of the swellings at once, and let out a small amount of blood, partly fluid and partly coagulated. The remainder of the hemorrhoids were rapidly congealed, and removed in this case by the knife, the patient being scarcely conscious that anything was being done to him.

In other cases, where it had seemed to me that the venous enlargement involved not only the external but also some of the internal veins, a modification of this proceeding was necessary. The hemorrhoidal mass having been moderately but not violently forced from the anal outlet, the whole mass is to be frozen by the ether-spray. The surgeon should be prepared to seize it, if necessary, with a pair of double-hooked forceps to prevent its sudden and spasmodic return. The congelation having been effected, long hare-lip needles are run through the base so as to transfix it; around each of these needles (for usually two, or perhaps three may be needed) a ligature is turned in the figure of 8, sufficiently tight to control hemorrhage but *not to produce strangulation* of the tissues, a condition always excessively painful. The frozen piles are then removed by the scalpel or scissors, the patient scarcely feeling the incisions.

In the course of twenty-four hours the needles and ligatures can, if necessary, be removed, but the bowels must of course be kept quiet, so that their presence gives but little inconvenience, especially if the points of the needles are removed by proper cutting pliers. The wound which is left may be a little irritable

for a few days, but this condition may be remedied by the use of an opiate lotion.

Hemorrhoids strictly internal are best treated by acids or the cautery; and in using the latter, we must remember that the freezing apparatus with the ether-spray is barely applicable, the crystals of ether formed in the frozen part being inflammable. In the application of the acid we must be guided by the following rule, namely, so to use it as to produce slow inflammatory shrinking and consolidation of the enlarged veins, but not so deep a destruction of tissue as to cause a slough which will open into the veins, at least with any rapidity; for under such circumstances we may find the patient's rectum suddenly full of blood, and the amount may even be such as to cause anxiety for the patient's life. Of this event, namely, hemorrhage into the rectum, an example is related by Petit. A patient had hemorrhoids which were supposed to be external, while in truth they were only temporarily protruded. Almost immediately after they had been cut off, the skin which had supported them was drawn inwards. Internal hemorrhage ensued which could not be suppressed, and proved fatal in less than five hours. The rectum and colon were found full of black coagulated blood.

It is true that in the present day we possess instruments to plug the rectum, to distend it, or to admit of the introduction of ice; but all these proceedings are painful, nor are we always sure of controlling internal hemorrhage beyond the limits of the plug.

We must, however, confess that there are many cases in which the shape of the tumour is such as to be best treated by the ligature, tied so tight as to completely strangulate the parts. In these cases the ether-spray may be used with advantage, both at the time of the operation and afterwards, in allaying pain. The ligature should be of strong dentist's silk, well waxed, so as not to be acted on by moisture; it should be so strong as to defy breaking by one pair of hands, and the knot should be so tight as quite to destroy the enclosed tissues. For if not, and any degree of vitality remain, painful swelling shortly supervenes and the patient's sufferings return. Also the surgeon should recollect that the "external integument" is highly sensitive, and that the act of including any portion of it in ligature must of necessity be painful. He should therefore sever the skin from the hemorrhoid by the use of scissors, and be careful that it is mucous membrane and vein only which is included in the noose.

Finally, the ether-spray may be used as a means of relief to those suffering from inflamed piles, and unwilling to submit to operation. I lately saw a lady in this condition. She had suffered so much from a mass of hemorrhoids, which were subject to occasional discharges of blood, and occasional attacks of

inflammatory swelling that her courage was quite gone. I found her in great agony; the anal outlet occupied by a mass of tense hemorrhoids of livid red colour, looking, to a casual observer, as if they were on the point of sloughing. The ether-spray caused them to become white, shrunken, and insensible to pain; and even when this state of congelation had passed away, the lull of pain lasted a considerable time, and the opportunity was thus afforded for other measures by means of which her restoration to health was ultimately effected.

The ether-spray may be used in many other operations about this region.—*Practitioner, April* 1869, *p.* 203.

ORGANS OF URINE AND GENERATION.

69.—PRACTICAL REMARKS ON THE TREATMENT OF URETHRAL STRICTURE, WITH A DESCRIPTION OF A MODIFICATION OF HOLT'S INSTRUMENT.

By Dr. Freeman J. Bumstead, New York.

[During a period of eight months, Dr. Bumstead treated thirty-three cases of urethral stricture; of these, eight were treated by simple dilatation, with bougies and sounds in the usual manner.]

The advantage of conical bougies with olive-shaped points, although long known, is not so universally appreciated as it should be, as evinced by the fact that these instruments have several times within the last year or two been brought forward as new. The bluntness of their points, which prevents their engaging in the lacunæ of the canal, and the flexibility of the constricted neck, which facilitates their adaptation to the urethral curves, render their introduction both easy and safe even in the most inexperienced hands; and, again, the conical shape of the shaft materially promotes the process of dilatation. This form of bougie cannot be too highly recommended, especially to those who have had only a limited experience in the use of urethral instruments.

Catheters made upon the same principle, with conical extremities and bulbous points, are admirably adapted to cases of retention of urine dependent upon the enlarged prostate of old age or prostatitis, or upon ordinary organic or spasmodic stricture, if passable by anything larger than a filiform bougie.

The French "*bougies à boule*" afford the only means available (aside from the endoscope) of detecting slight urethral contractions upon which the persistence of chronic gonorrhœa or a gleet often depends. They are also of great value in determining the length of strictures, as well as the presence of a second contrac-

tion beyond the one first met with. The term "*à boule*" is inappropriate, since the point should not be spherical or olive-shaped, but rather be furnished with an abrupt shoulder, which affords the greatest delicacy to the touch in passing slight contractions. I have been in the habit of calling them "acorn-pointed bougies." Different sizes are, of course, requisite.

"Filiform bougies," the point of which is even smaller than one-third of a millimetre in diameter (No. 1 of the French scale), are indispensable in the treatment of tight strictures. The absurdity of the American scale is shown by the fact that its smallest number measures two and one-third millimetres, or seven times the diameter of the bougies referred to. Hence, the surgeon provided only with instruments corresponding to the American scale will find many "impassable" strictures which can readily be passed with smaller instruments, and, in cases of retention of urine, will be tempted to resort to uncalled for violence, or to puncture of the bladder. In the great majority of cases referred to me as "impassable" strictures by physicians in general practice, the first trial of a filiform bougie is found to surmount the obstacle.

The best French bougies are those made by Lasserre, No. 5 Av. Victoria, Paris. Those sold by Weiss, in London, are superior in that they are not so adhesive, but they are much more costly.

From Nos. 14 to 30 inclusive, instruments either of steel, block tin, or fusible metal may be employed, and possess the advantage of their surface not yielding and becoming indented in the presence of a firm stricture. The curve, or rather double curve, known as Bénique's, the anterior curvature corresponding to the natural curve of the urethra at the peno-scrotal angle when the penis is in a flaccid condition, is a very desirable one, especially with deeply-seated strictures. The extremity of the instrument should taper off for an inch and a half to two inches, so that its point may be two sizes smaller than the main body of the shaft. Thus the point will readily enter a stricture through which the next smaller size has already been passed, and we obtain the advantage of the principle of the wedge in promoting and hastening dilatation. The same plan enables us to dispense with the sounds of every other number in the construction of portable cases of small bulk.

Twenty-five of the thirty-three cases of stricture referred to at the commencement of this article were treated by rupture or by urethrotomy, either internal or external. This may seem a larger proportion, but is not an unjustifiable one, in my own opinion. During the first eleven years of my practice I employed simple dilatation almost exclusively, except in the small proportion of cases in which, from the presence of perineal

fistulæ, or other causes, perineal section was absolutely requisite. Subsequently I was led to make a thorough trial of Holt's method, and of the urethrotomes of Maisonneuve and others; and now, after five years' further experience, I feel fully convinced that the immediate treatment of stricture either by incision or rupture, is not only as safe as that by dilatation, but that it saves much valuable time, and that its results are more permanent and satisfactory. Instead of weeks, or even months, devoted to the repeated introduction of instruments, which cannot be said to be free from danger, the stricture is removed at one sitting with an amount of risk which I believe is even less than the aggregate of that incurred in dilatation; and the tendency to relapse is by no means so marked. Entertaining this opinion, I cannot but regard the opposition to operative procedures in cases of stricture as unfounded; and especially do I deem it unfortunate that the statement, which is said to have emanated from eminent surgeons, should have found its way into print, to the effect that strictures can as well, or better, be treated by rest in bed and low diet alone, as by any other method.

Holt's Instrument.—Holt's instrument for the rupture of stricture is now well known to the profession, and has acquired wide and deserved celebrity. My first trial of it was about five years ago, and I have now used it in upwards of thirty cases, in most of which it has proved highly satisfactory, and in none of which has there been any more serious consequence than moderate urethral fever, which has yielded to the hot bath and the exhibition of opium and quinia internally.

At the same time, it has been evident that the instrument, as originally proposed by Mr. Holt, possessed certain defects, and could be modified to advantage.

Others, as well as myself, soon discovered that the expansive power of the instrument was insufficient; that even when the largest tube was employed, there were some strictures which would merely stretch as it passed without being ruptured, and would afterwards tend strongly to return to their former condition. The remedy for this was evident, viz., to allow wider separation of the blades and employ larger tubes. This modification has sufficed for the purpose in most cases, although not in all. In one of the above twenty-five cases I employed the largest sized tube, with the immediate effect of being able to introduce No. 23 (French) sound, but, at the end of forty-eight hours, No. 17 was still firmly "held" by the stricture, situated at the bulb, when I had recourse to internal division with Maisonneuve's urethrotome, and no tendency to recontraction has appeared up to the present time—five months since the

operation—the patient still continuing his visits for the purpose of observation.

But there was still another objection to Holt's instrument. The size of its point, which equalled No. 7 of the French scale, or No. 1 American, rendered it impossible to use the instrument in very narrow strictures until, by the successive introduction of filiform bougies, the requisite calibre had been attained; and even then the curve of the instrument was such that its insertion was not always an easy matter. Thus, after dilating the stricture with bougies up to No. 7 (French), I often found considerable difficulty in introducing a Holt, especially as the shaft of the instrument rapidly increases in diameter, so that practically a much greater degree of dilatation than No. 7 is required for its insertion to such an extent within and beyond the contraction as to enable us to use it for the purpose intended. This is evident on inspecting the instrument, which will be found to require a calibre of No. 11 (three and two-thirds millimetres=No. 4 American scale) in order that the introduction of either of the tubes along the central wire may have any effect upon the stricture.

To obviate this difficulty, Mr. Stohlmann, of the firm of Messrs. Tiemann & Co., at my request, changed the curve of the instrument, so that it should correspond to what is known as Thompson's curve. I also directed that the point should be made separate, so that it could be unscrewed, and in its place a filiform bougie could be attached, which should possess all the advantages of the conducting bougie of Maisonneuve's urethrotome, and enable me, with a little time and patience, to insert the instrument to the requisite extent in any case of stricture which was at all passable, and at a single session. Again, the central wire is made hollow, and in fact consists of a tube, the vesical opening of which terminates near the extremity of the instrument, anterior to the screw point, so that the flow of urine may indicate when the bladder has been entered. This, however, is a minor consideration with the bougie attachment, since any deviation from the proper course is now almost impossible. These modifications have been found to accomplish all that was desired, and will, I believe, materially increase the value of Mr. Holt's instrument.

I would add that the same bougies may be made to fit on to both Holt and Maisonneuve, so that the choice of the instrument need not necessarily be determined until after the conductor has been passed.

Thebaud's Instrument.—The instrument for the rupture of strictures, invented by my friend, Dr. Julius S. Thebaud, of this city, has not, I believe, been before described. In shape it corresponds to an ordinary sound, but the extremity of the

instrument is split horizontally for a distance of about five inches, forming two blades, which are separated in a vertical direction by turning a screw in the handle. There are two sizes; the point of the smaller has a diameter of four millimetres (No. 12 of the French scale); that of the larger, one of six and two-thirds millimetres (No. 20 of the French scale); hence it is evident that the instrument cannot be used in tight strictures without preliminary dilatation or incision. In using the instrument, the extremity is passed fairly through the stricture, when the screw at the handle is turned until the contraction is felt to "give," or the desired amount of dilatation is effected, as indicated by a scale marked on the screw shaft.

This instrument is one of very great power and capacity. The larger one is capable of rupturing a stricture to a size much exceeding No. 30 of the French scale (No 18 American). By measurement this power equals a sound of five-eighths of an inch in diameter. Compared with Holt, Thebaud's instrument has therefore the advantage of any desirable amount of dilating and rupturing power, and the disadvantage of not being adapted to tight strictures. The extreme power may render its use dangerous in unskilful hands; and there is the further objection that it requires some care to determine when the stricture is accurately caught to its full extent near the point of the instrument. Still, it is remarkable with what impunity the urethral walls will bear the apparent amount of violence which this instrument can exercise. I have used it in some fifteen to twenty cases, and Dr. Thebaud himself in about double the number, without unpleasant consequences. In one of those rare cases of pure spasmodic stricture which we sometimes meet with, I assisted Dr. Thebaud in introducing his larger instrument into the membranous portion of the urethra, and opening the blades to their fullest extent. The operation was performed on the same principle as leads us to rupture the sphincter ani in irritable conditions of the lower portion of the rectum. The tissues were felt to suddenly yield, doubtless in consequence of their rupture, but there was no subsequent chill, fever, undue hemorrhage, incontinence of urine, or other unpleasant consequence, and the patient was about attending to his business the following day. The spasmodic action was entirely relieved for over a year, but, as I have learned, subsequently returned. For a case of this kind no other instrument that I know of would have served the purpose.

I have found Thebaud's instrument of special value in cases like one before mentioned, in which the stricture had not been sufficiently ruptured by the use of Holt.

Before leaving the subject of instruments intended for the rupture of stricture, it is proper to refer to Mr. Thompson's

instrument, although its inventor designed it rather for the rapid dilatation than actual rupture of the constricting band. I have not as yet made use of this instrument, but the principle of it is excellent, and I should judge it to be of great value whenever a timid patient refuses to submit to what appears to him a more violent procedure. It is evident that the dilatation may be carried to the point of rupture, and thus the same effect be produced as with either of the above-named instruments.

Maisonneuve's Urethrotome.—This instrument is now too well known to require description, and the reader of our current medical literature must have observed the numerous favourable notices of it, emanating from various sources, which have appeared during the last few years. In my own opinion, it is by all odds the simplest and the best urethrotome ever invented. Its filiform attachment enables it to be used in every stricture, however tight, through which the finest bougie can be passed; the bluntness of the apex of its triangular-shaped blades is well adapted to prevent any sound portion of the canal being wounded; and its simplicity renders it easily cleansed, and little liable to get out of order.

I desire to call attention especially to the first of these advantages which is also shared by my own modification of Holt, as before described. A patient comes to your office with what appears at first to be an impassable stricture. After a while, however, you succeed in engaging the point of the filiform extremity of one of Maisonneuve's bougies within the contraction. Your patient is allowed to remain for half an hour, when the bougie will enter still further, and thus by the process of what has been called continuous dilatation, the apparently impassable stricture is soon enlarged sufficiently for the full and free passage of the fine bougie. This is now screwed to the end of the metallic shaft of Maisonneuve or Holt, which by the aid of one finger in the rectum may now be guided into the bladder, within which the bougie-conductor coils itself up as the shaft advances. It remains only to thrust down the knife or tube, as the case may be, and your patient is relieved of his stricture before leaving your office. This may seem to be making light of a serious operation, but it is what I have often done, especially with patients from a distance, whose stay in the city was necessarily limited. A hackney coach may be called to take the patient to his lodgings, and twenty-four hours' quiet in his room is usually sufficient.

[After the operation, the parts should be interfered with as little as possible for the first few days. Either before the operation or immediately afterwards, it is a good plan to divide the meatus a little so as to allow of the use of the largest-sized sound.]

I am not over-sanguine with regard to the permanence of the cure after any mode of treatment, in the absence of prolonged attention. It is true that I have still patients under observation, operated upon four or five years ago, in whom there is no tendency to relapse, as shown by the size of the stream and the freedom with which a sound may be passed. But from what we know of the pathological anatomy of strictures, and from the evidence afforded by casts of the canal some time after the passage has been freely opened, it is evident that the tissue of new formation does not entirely disappear even on the supposition that it is materially diminished. Moreover, cases will return to disappoint us when we had hoped for better things.—*American Journal of Medical Science, Oct.* 1868, *p.* 321.

70.—ON SPASM OR EXCESSIVE CONTRACTION OF THE MUSCULAR COAT OF THE URETHRA, COMMONLY CALLED SPASMODIC STRICTURE.

By William S. Savory, Esq., Surgeon to St. Bartholmew's Hospital.

[Since it has been known that the urethra in its entire course is invested by muscular fibre, it has been admitted that spasm may occur in any portion of the canal. The opinion, however, seems very common that the so-called compressor urethra muscle is the chief agent in the production of spasmodic stricture, and that it is, therefore, usually limited to, and always most intense at the membranous portion of the urethra. But this view is not borne out either by observation or analogy.]

That spasm or muscular contraction of any degree is in its very nature transitory there can be no doubt; but yet cases occur in which all the symptoms of stricture endure for years, but in which, nevertheless, there is clear evidence to show that it entirely depends on muscular contraction.

In the following case the spasm very closely simulated organic stricture.

A man between thirty and forty years of age, whose health for some time previously had been unsatisfactory, complained of considerable difficulty in passing urine. Very much straining was needed to relieve the bladder, and then the urine only in part escaped in a very slender stream, and the rest dribbled away. The gentlest introduction of any instrument always gave acute pain, and the point was arrested at a variable distance, but usually within some four or five inches of the orifice. So sensitive was the urethra that the canal could not be fairly examined without chloroform, and even then, on almost every occasion, the instrument was arrested before it reached the

bladder. Only once or twice was this accomplished in the earlier part of the case, and then an instrument of moderate size—No. 7 or 8—was carried through with facility. This state of things endured for many months, and it was observed that the condition of the urethra always varied with the general health. Now and then, to the man's astonishment, the urine would pass freely in a full stream, but in spite of every apparent precaution the amendment was only transitory; in a few hours the difficulty and distress was as great as ever. After a time all attempts to pass an instrument were given up except when some fresh surgeon was consulted, who of course did not believe in the difficulty until he himself had made an unsuccessful attempt to overcome it. Then, sometime after the urethra had been left to itself, the symptoms gradually abated. The first indication of improvement was that during a loose action of the bowels, after aperients, the urine would escape in a full stream without difficulty. At times a tolerably free stream would flow for days together, and then again, perhaps from some indiscretion in diet, the condition of parts would become as distressing as ever. Even to the last any attempt to introduce an instrument was always unsuccessful and mischievous. But at length the evil gradually abated, and for the last year or two the urine has been passed freely in a full stream.

In the Lancet of April 13, 1867, Mr. Campbell De Morgan has recorded a case of what may well be called permanent spasmodic stricture, inasmuch as it was of some twenty years' duration.

The explanation of these and of many other cases more or less persistent and unyielding, I take to be this: The muscular coat of the urethra cannot always be in a state of spasmodic or inordinate action, but is immediately excited to contract unduly by any impression upon the mucous membrane of the urethra or adjacent parts: so the contact of urine, or still more of an instrument, at once provokes it. Thus, as the canal is almost always more or less contracted by the passage of urine, and still more completely closed by any attempt to pass an instrument, evidence of stricture always exists when its condition can be examined, and thus, so far as every appearance is concerned, the contraction is persistent, but in all probability there is in intervals of complete quietude more or less complete relaxation.

The influence of chloroform is sometimes very great in these cases, and its value twofold—in diagnosis and in treatment. It is not always, however sufficient to cause thorough relaxation of these muscular fibres.

When spasm is associated with organic contraction or inflammation or congestion, either alone, or still more when combined,

it may be reasonably assumed that the cause of it is obvious enough; but if spasmodic stricture may and often does occur independently of any of these, the question arises—To what cause may spasm, thus pure and simple, be due?

The exciting cause of simple spasm may be either in the urethra itself, or it may arise in neighbouring or even in distant parts. A common example of the former class is the spasm which is often provoked by the introduction of an instrument. Everyone knows how the effect is increased by clumsy manipulation, and how the difficulty is often averted by attention to the temperature of the instrument, and, better still, by gentleness and lightness of hand. As before mentioned, the difficulty may be often escaped, too, by rapidly carrying the instrument into the bladder, taking the urethra, if one may so speak, unaware. So, again, the distress, which frequently follows the employment of irritating injections, or the passage of irritating urine, as sometimes after the application of a blister, are examples of the same kind. As illustrations of the latter class may be mentioned the spasm associated with inflammation of the prostate, and that which is often induced by some affections of, or operations on, the rectum, or even by fracture of the leg. The degree to which these several exciting causes may act will of course depend upon the disposition of the urethra itself.

If I may venture to speak in general terms, I would say that, in the treatment of cases of stricture, the rule should be to try first what can be done by other measures before resorting to mechanical means. The introduction of an instrument may be indeed necessary in the first instance as a means of diagnosis, often enabling us moreover, by observing its effects, to determine whether it shall be employed, and if so when, in the further treatment of the case.

It need hardly be remarked that in the treatment of spasmodic stricture when not associated with any morbid change in the part—when pure and simple—the cause of it, whether direct or indirect, must be sought for, and if possible removed.

Beyond the all-important means of rest and recumbency and warmth in the form of baths or otherwise, there are, we know, remedies which have powerful action in directly subduing spasm—chloroform for instance, which in cases of emergency will sometimes signally succeed, and enable us without difficulty to pass a catheter through an urethra which just before had proved impermeable. Opium, which in these cases is so often an invaluable remedy, as a rule perhaps is best administered as laudanum by the rectum; but this or some other form of it, whether solid or fluid, may be given by the mouth, or morphia may be injected under the skin. Belladonna, too, or its alkaloid atropine, is sometimes useful, especially when locally applied;

but, as a rule, I think they bear no comparison in efficacy to opium.

Active aperients, too, are often strikingly serviceable. The urine, which up to the period of their action had been obstinately retained, will sometimes pass freely during a sharp action of the bowels. The escape of urine, which is often simultaneous with the action of the bowels, and usually then most free, is a fact which should be always borne in mind. And it may be remarked that the success which attends the use of such remedies as those which have been indicated is an additional proof, and a strong one, of the nature of the case. But, let it be repeated, we should, whenever it is practicable, go farther than this in our treatment of spasm of the urethra, and discover if possible the cause on which its occurrence depends.

Even when spasm is associated with structural change or organic stricture, it may be controlled by the same means, more or less actively employed according to circumstances, although of course their effects are not now so striking or apparently satisfactory. When there is evidence of further mischief in the form of inflammation or congestion, local depletion or perhaps counter-irritation by other means than the application of cantharides may be advisable. But except in extreme and very urgent cases the use of drugs and of all active remedies may well be dispensed with, and reliance placed on simple measures of hygiene, such as wholesome food, warmth, and, above all, rest for a while even in bed.

In conclusion, it is only right to state that the substance of this paper was written more than five years ago, and that further experience during this period has confirmed the opinions I have ventured to express. However faulty these opinions may be, they are therefore hardly open to the charge of hasty publication.—*St. Bartholomew's Hospital Reports, Vol.* 4, 1868, *p.* 21.

71.—ON THE MEDIO-LATERAL OPERATION FOR LITHOTOMY.

By Henry Lee, Esq., Surgeon to St. George's Hospital.

[Mr. Lee first performed the operation described in October, 1867, and three months afterwards, saw an account of Sir W. Fergusson's operation by a semicircular external incision.]

The medio-lateral operation is performed in the following way :—

The patient is placed in the ordinary position for lithotomy, and a grooved staff having been introduced, the skin of the scrotum is held moderately tight by an assistant. An incision

is then made in the median line of the perineum; this should extend through its posterior half, terminating two or three lines in front of the anus; from this point the incision is continued for a quarter of a circle round the front and left side of the rectum. The finger of the left hand may then be put into the wound and the rectum pressed back whilst an additional touch or two with the knife separates it still farther from the parts in front. The forefinger of the left hand is now passed into the rectum, and the knife, with its back towards the bowel, is passed, at the posterior part of the central incision, into the membranous portion of the urethra. With the finger as a guide this is done with great ease and certainty; a bistoury or knife with a probe at its extremity is then passed into the same opening, and made to slide along the staff into the bladder. The blade of the knife is then directed towards the patient's left side and somewhat backward, and as it is withdrawn the heel of the knife passes in the direction of the original incision through the skin; the point of the knife remains very nearly in the median line; a free external incision is thus produced involving no important parts, with a small opening into the bladder. The urethra being opened in the median line is reached with the greatest facility with the finger, and the incision into the bladder is in the same way very easily dilated. The forceps, or any other instruments that may be used, are also introduced more directly into the bladder than in the ordinary lateral operation.

In this operation all the usual accidents and difficulties which are likely to occur in lithotomy are guarded against. With the finger in the rectum as a guide the urethra may be opened without difficulty, and the probe-pointed bistoury being guided by a grooved staff cannot well fail to enter the bladder.

The incision into the prostate gland is made from within outward, and this I consider an advantage. An incision made in the opposite direction partakes more or less of the nature of a stab, and the point of the knife, even when guided by the most skilful hand, will sometimes wander from the groove in the staff. I suppose that there is no operator of experience to whom this has not happened. It is an accident which, when it does occur, may generally be easily remedied; but still it is one which has led to very unpleasant results, and one which every operator would gladly avoid if possible.

The medio-lateral operation for lithotomy is performed in far less time than it requires to describe it, and I have been surprised, in operating both upon the dead and living subject, with what facility it is accomplished. The instruments which I have used are an ordinary staff grooved in the median line, a common narrow scalpel cutting on one side only, and a curved

bistoury with a probe projecting two lines beyond the termination of its cutting edge.

In addition to the case just mentioned two others have recently come under my care, in which I performed the mediolateral operation.—*St. George's Hospital Reports, Vol.* 3, 1868, *p.* 27.

AFFECTIONS OF THE EYE AND EAR.

72.—ON THE TREATMENT OF THE THREE MOST TROUBLESOME FORMS OF PURULENT OPHTHALMIA.

By George Lawson, Esq., Surgeon to the Royal London Ophthalmic Hospital, Moorfields.

Purulent Ophthalmia of Newly-born Infants.—The indications for treatment are to wash away the discharge from the eye as often as it collects, and to use some astringent lotion to arrest the re-secretion of the purulent matter. Lotions of alum, or of sulphate of zinc and alum, and drops of nitrate of silver, are the most useful astringents in purulent ophthalmia. The lotion which I generally use is one of aluminis gr. vj ad aquæ ℥j. The mode, however, of applying the remedies is of as much importance as the remedies themselves. The lotion should be gently squirted into the eye with an india-rubber syringe with an ivory nozzle, or with a small glass syringe, every half hour or hour, according to the severity of the case, the object being to thoroughly cleanse the eye from all discharge as often as it is re-secreted. This treatment should be pursued by night as well as by day. The intervals between the use of the lotion may be increased, as the discharge decreases in quantity. The carrying out of these instructions should be intrusted solely to the nurse, as the mother so soon after her confinement is unfitted for the duty, and rest is also essential for her in order to insure a due supply of milk for the child. The easiest way of applying the lotion is as follows: the nurse should lay the child on her lap, turning its head a little to one side or the other, according to the eye she is going to wash out. With the thumb and finger of her left hand she gently separates the lids, whilst with the right hand she squirts a stream of the lotion into the eye from the nasal side, allowing it to run away from between the lids on to a soft napkin which she has placed under the child's head to receive it. If the case is very severe the surgeon should see the child once or twice a day himself, and having first washed the eye thoroughly from all discharge with a stream of cold water, he should drop into it two or three drops of solution of nitrate of silver, gr. ij, ad aquæ ℥j, and order the

alum lotion to be continued as directed during his absence. In some cases where the nurse is very awkward, and cannot rightly use the lotion with a syringe, it may be efficiently applied by means of a soft camel hair brush. From time to time a little unguent. cetacei should be smeared on the edges of the lids to prevent their gumming together.

Purulent or Contagious Ophthalmia.—It has been called also *Egyptian Ophthalmia*, from its being ever present in Egypt, where the most severe types of the disease are to be constantly found. The characteristics of this disease are that it is purulent and contagious. In its mild form it closely resembles catarrhal ophthalmia, for which indeed it may be mistaken; but in the worst cases it almost equals in severity the gonorrhœal affection of the eyes. The peculiar tendency of purulent ophthalmia is to attack masses of people who are congregated together, and living without due attention to cleanliness and ventilation. Hence it is that this disease has frequently broke out amongst soldiers in barracks; amongst the poor in workhouses, and in large pauper schools in the country. Although purulent ophthalmia is undoubtedly propagated by inoculation, yet there is abundant evidence to show that it may be epidemic, and spread without any direct conveyance of the purulent secretion from eye to eye.

Treatment.—In all outbreaks of this disease sanitary precautions should be at once taken to prevent its spreading, and the bad cases should be kept apart from the others. A daily inspection should be also made of those who are living in the same community, in order to treat each fresh case as soon as the early symptoms show themselves. A mild case of purulent ophthalmia may be treated with a lotion of aluminis gr. iv ad aquæ ℥j; or with zinci sulphatis gr. j, aluminis gr. iij, aquæ ℥j; which should be used every two or three hours, the patient taking care that with each application a little is allowed to run into the eyes. In the intervals between using the lotion, the eyes may be frequently bathed with cold or iced water, to keep them free from discharge. A solution of nitrate of silver, gr. j or gr. ij, ad aquæ ℥j, is very useful, and especially in those cases where there is much chemosis of the conjunctiva, or swelling of the lids. To prevent the gumming together of the eyelids during sleep, a little unguent. cetacei should be smeared along their tarsal borders every night.

At the commencement of the attack the bowels should be well acted on by some purgative, and, if the patient is hot and thirsty, an alkaline or effervescing draught may be prescribed; but as a rule, tonics, such as quinine, iron, or bark, will be required, and these should be continued during the progress of the ophthalmia. The disease is very depressing, and the ten-

dency to ulceration and sloughing of the cornea is increased as the vital energies of the patient are lowered.

If the purulent ophthalmia is very severe, the plan of treatment recommended for gonorrhœal ophthalmia in the next section, should be pursued.

After the severity of the disease has been arrested, there is apt to remain a muco-purulent discharge, which will often obstinately resist all treatment for many weeks, or even months. For this condition I have frequently found much benefit from the use of a few drops of zinci chlorid. gr. j ad aquæ ℥j, dropped twice a day into the eye. When this chronic discharge is persistent, the upper lids should be everted, and it will then be frequently found that it is due to a granular state of the palpebral conjunctiva, induced by the disease. This granular condition of the lids is one of the most frequent results of purulent ophthalmia, and one of the most intractable diseases the surgeon can be called upon to treat. Without entering upon the numerous remedies which have been tried and vaunted as certain cures, I will only state the one mode of treatment with which I have had the most reason to be satisfied. It is the application of a strong solution of nitrate of silver, varying in strength, according to the severity of the case, from gr. v to gr. xx ad aquæ ℥j, and, after waiting thirty or forty seconds to allow it to take full effect, washing off the surplus with a stream of cold water, or with a weak solution of common salt and water.

The way in which the solution should be applied is as follows: The patient is to be seated in a chair, and the surgeon, standing behind him, with a probe everts the upper lid so as fully to expose the palpebral conjunctiva, over the surface of which he paints with a camel's hair brush the solution of the nitrate of silver, taking care to apply it thoroughly to the reflection of conjunctiva which forms the oculo-palpebral fold. After waiting for about half a minute, he then, with a syringe, gently squirts over the granular surface a stream of cold water, or what is better, a solution of common salt of about the strength of gr. x, ad aquæ ℥j, to wash away and neutralise all the surplus nitrate of silver, so as to prevent its irritating the eye, or blackening the ocular conjunctiva, a misfortune I have seen occur when strong solutions of the caustic have been frequently used without taking these precautions.

Gonorrhœal Ophthalmia is an acute specific inflammation of the conjunctiva of the lids and globe, induced by the inoculation of some gonorrhœal matter into the eye. It is characterized by a profuse purulent discharge from between the lids, which is of a yellow colour, and exactly corresponds in appearance with that which flows from the urethra. The disease is rapid in its pro-

gress, and very destructive; unless it is soon checked, the eye is lost.

Treatment.—A few years ago the treatment consisted in excessive bleedings from the arm, and in the use of strong depressing medicines. Experience has shown the error of such proceedings, and by now adopting a directly opposite course, a far larger proportion of cases recover with good and useful eyes. In gonorrhœal ophthalmia the treatment must be constitutional and local.

Constitutional Treatment.—From the very commencement of the attack the strength of the patient must be supported by tonics, diffusible stimuli, and a liberal diet. The whole history of a gonorrhœal ophthalmia is of a depressing character. The patient, generally suffering from gonorrhœa at the time the eyes become inoculated, is, from the nature of his complaint, and the treatment adopted to cure it, below the standard of health. The disease itself is also very exhausting; but the prospect of loss of vision, with the utter annihilation of all future prospects, adds to the sense of loneliness and despair. The fact that the patient is suffering from a severe urethral discharge, will not forbid the free use of tonics and stimulants. The danger of ulceration and sloughing of the cornea is increased as the vital powers are depressed. Having therefore first acted freely on the bowels by a moderate purgative, quinine in 2-gr. doses, or cinchona with the mineral acids, should be given every four hours. If there is much pain or irritability, opium should be prescribed, either in small quantities frequently repeated, or in one full dose at bed-time. When there is heat of skin, with thirst and a furred tongue, an effervescing mixture with ammonia may be advantageously ordered before prescribing the direct tonics. The diet should be one with meat or beef-tea, and with a certain amount of wine or brandy, according to the strength of the patient.

Local Treatment.—The best applications are nitrate of silver, lotions of alum, or sulphate of zinc and alum, and cold.

1. *Nitrate of Silver.*—This is best used in the form of solution, varying in strength from gr. x to gr. xxx, ad aquæ ℥j, according to the severity of the case. The lids should be everted, and the conjunctival surfaces painted over with the solution, which should be allowed to remain a few seconds, so as to whiten the parts, and be then washed off in the manner described before.

This should be repeated once daily, and in very bad cases a second application may be necessary. When the lids are so swollen that they cannot be everted, two or three drops of a weaker solution of nitrate of silver, from gr. ij ad gr. x, ad aquæ ℥j, may be dropped twice a day into the eye, after it has

been first cleansed by syringing away the discharge with cold water.

2. *Lotions of Alum.*—Gr. vj ad aquæ ℥j, or of sulphate of zinc and alum, of the proportions mentioned at page 244, should be used at least once every hour to wash away the discharge as often as it accumulates. The lotion should be gently injected over the surface of the globe with a syringe or india-rubber bottle, so as thoroughly to wash away all purulent matter at each application.

3. *Cold* is very grateful to the patient, and may be applied during the intervals between using the lotion, by placing a fold of lint wet with iced water, over the eyelids, and changing it as often as it becomes hot or dry. The patient may also be allowed to wash away the discharge as fast as it exudes from between the lids with a piece of linen dipped in the iced water. By a steady perseverance in this line of treatment the best chance of saving the eye is afforded to the patient, but the disease is frequently of so virulent a character, that in spite of all remedies, and the most judicious management, the cornea sloughs, and the eye, for all useful purposes, is irretrievably lost.—*Practitioner, Dec.* 1868, *p.* 338.

73.—ON THE TREATMENT OF GRANULAR OPHTHALMIA AND PANNUS BY INOCULATION.

By J. G. Hildige, Esq., Surgeon to the National Eye and Ear Hospital.

The following cases, treated at the National Eye and Ear Hospital, show the efficacy of inoculation as a remedy for the cure of the above diseases, when all other means had proved unavailing.

Case 1.—Ellen B., aged seventeen, of a healthy and tolerably strong appearance, applied for medical advice under the following circumstances. She stated that when she was four years of age her eyes commenced to be affected, and ever since that time, during a period of thirteen years, she had been almost continually under medical treatment, her sight being occasionally so bad that she was obliged to be led about. On examination I found the cornea of each eye extremely vascular, and so opaque that it was with difficulty she could discern large objects placed near her. The mucous lining of the upper eyelids was covered with granulations and much thickened; it also showed signs of long-continued treatment. She suffered considerably from pain in the eyeballs and temples, which from time to time became so severe, particularly at night, that sleep was completely banished from her pillow. As the usual remedies were followed only by

temporary improvement, and as she had been suffering so long from the disease, I resolved to have recourse to inoculation, a remedy which I had seen elsewhere employed with the best possible results, and which was not contraindicated in this case. The pus was taken from the eye of an infant suffering from acuet purulent ophthalmia, and was introduced by means of a camel hair-brush between the girl's eyelids. After the expiration of twenty-four hours considerable irritation, accompanied by pain, set in, and at the end of forty-eight hours both eyes were suffering from an acute attack of purulent ophthalmia. Active antiphlogistic treatment was employed, the disease ran a favourable course, and at the end of fourteen days the inflammatory symptoms had subsided, leaving both corneæ perfectly sound, and showing indications of commencing improvement. Three weeks later both corneæ had become so transparent that the patient could read large type; and at present, four months from the day of inoculation, her eyes are perfectly sound, and her sight so good that she can read small type and see distant objects more distinctly than ever she remembers to have done in her life.

Case 2.—Eliza S., aged fifteen, apparently of a healthy and strong constitution. She had suffered from granular lids and pannus of right eye for a period of three years, during the greater portion of which time she had been under medical treatment. The cartilage of the upper eyelid was hypertrophied, and its mucous lining, which was covered with granulations, was much thickened and altered in structure. The cornea was vascular and opaque, so that the eye was almost useless to her. The left eye presented no trace of disease, but the sight of it had become much impaired from sympathetic irritation. This patient was inoculated at the same time as the preceding one, the left eye having been previously bandaged; and after a period of three days acute purulent ophthalmia, accompanied by considerable constitutional irritation, set in. The disease ran its course in about fourteen days, leaving the cornea perfectly sound; and at the end of ten weeks she could read ordinary-sized type with ease and see distant objects.

Case 3.—Mrs. B., aged forty-five, of a somewhat delicate appearance. She had suffered from granular lids for several years; both corneæ were, however, perfectly transparent. Her sight was extremely bad, owing to a lesion of the retina which had existed for some time, and which was slowly progressing. She was inoculated with pus taken from a patient suffering from blenorrhea. A slight attack of purulent inflammation followed after a period of forty-eight hours. At the end of three weeks the attack had passed away, destroying every trace of granulations, and leaving both corneæ intact.

Case 4.—John B., aged ten, of a strong and healthy appearance. He had suffered for six months from granular ophthalmia, complicated with hypertrophy and ectropium of the eyelids of both eyes. The corneæ were perfectly transparent. Not wishing to resort to inoculation before making a trial of other remedies, I excised a portion of the diseased membrane from the internal surface of each lid, and afterwards cauterized the parts with the solid nitrate of silver, a pad and bandage being placed on each eye in order to retain the parts *in situ*. This mode of treatment was continued for some time, but was not attended with any permanent benefit, so that I determined to treat the case by inoculation. A severe attack of purulent ophthalmia followed the application of the pus; it yielded readily, however, to treatment, so that at the end of ten weeks every vestige of the disease had disappeared, the ectropium being completely removed and the boy's vision excellent.

I have treated other cases of opacity by this means, and with the same beneficial results; and I consider that it may be safely resorted to in every case of granular ophthalmia, except when it is contra-indicated by a strumous or syphilitic diathesis, in which cases diphtheritic inflammation would be the inevitable result.—*Dublin Quarterly Journal, Feb.* 1869, *p.* 78.

74.—LACRYMAL OBSTRUCTION.

By Robert B. Carter, Esq., Consulting Surgeon to the Gloucestershire Eye Institution.

It is well known to practitioners that lacrymal obstructions depending upon stricture of the nasal duct, below the sac, are often of a very obstinate character. In some cases, when the canaliculus has been slit up, and Bowman's largest probe passed through the stricture, the difficulty is soon overcome. In others, and I think they form a majority, the stricture soon closes again, and the malady becomes as troublesome as ever. All manner of devices have been tried in vain; and such patients become a source of unmixed weariness at the hospital, and of weariness, mitigated by guineas, in the consulting-room. Cat-gut probes, laminaria probes, injections of all sorts and in all quantities, styles to be worn temporarily, and styles to be worn permanently, form only a few of the resources that have been tried, sometimes successfully, but yet with frequent failure even in skilful and practised hands. And, if these probings and manipulations were ever performed unskilfully, it could scarcely be expected that benefit would be derived from them.

Nearly at the same time, Dr. Ulrich Herzenstein, of Vienna, and Dr. Stilling, of Hesse Cassel, put forth the suggestion that the

difficulty in these cases was due to the fact that the instruments in common use were not large enough to dilate the nasal duct effectually. The bony channel of the duct is about three times the diameter of the largest of Bowman's probes; and hence this probe can scarcely be an efficient dilating agent within its walls. Both Herzenstein and Stilling sought for improved resources in the modern methods of treating stricture of the urethra. The former adopted the plan of splitting; the latter, the plan of internal incision. Herzenstein's instruments are, on a small scale, like those of Mr. Bernard Holt for the urethra; and their employment is said to have been attended success. I have no practical knowledge of them; but the method by internal incision I have now used sufficiently often to form some estimate of its value.

Dr. Stilling has contrived a knife (made by Weiss and Son) for his operation, somewhat resembling a small tenotome, rounded at the point, with a sharp cutting edge and rounded back, the blade about three quarters of an inch long, rather wider at the heel than at the point, and inserted into an ivory handle by a steel stem of such a length that the ivory handle is above the canaliculus when the point rests on the floor of the nose. This knife may be used to slit up the canaliculus, and may then be carried on in the same way as an ordinary probe; or the probe may be used first, to ascertain the position and measure the resistance of the stricture. The knife being fairly in the nasal duct, and its point on the floor of the nose, the resisting structures in the duct are to be freely divided, up to the bony wall, in three or more directions, until the blade is felt to be free in the duct, and can be turned round or moved up and down, without encountering resistance. The knife may then be withdrawn, and the fact of its having been in the nose may be tested by a probe; but generally there will be sufficient bleeding from the nostril to remove all doubt upon the point.

According to Stilling's experience, no other treatment than this is required. The incisions will be followed by a little swelling of the parts cut, so that the passage may be occluded for a time. But in the course of a day or two this swelling subsides, and no disposition to contraction remains. I have now performed the operation on four patients; and, with regard to three of them, sufficient time has not yet elapsed thoroughly to test its effects, although they are so far satisfactory. But in the case of a gentleman who had been suffering from obstruction for a long period, and for whom a probe had been passed at regular intervals, with only temporary benefit, a radical cure appears to have been brought about by the single operation. The probe now glides into his nose without encountering any obstruction,

the tears pass away freely, and there is nothing left to remind him of a malady that was once a source of daily and hourly annoyance.—*Practitioner, Jan.* 1869, *p.* 24.

75.—UPON AN IMPROVED METHOD OF EXTRACTION IN CASES OF CATARACT.

By Dr. Charles Bell Taylor, Surgeon to the Nottingham and Midland Eye Infirmary.

[In the year 1865 Dr. Taylor drew attention to a method of extraction in cataract, which he had found successful in several unpromising cases. (See *Retrospect*, vol. li., p. 284.)]

The instruments that I employ are a pair of sharp forceps that pierce the sclerotic, a very light speculum (a modification of Von Grafe's), and two knives, a line in width and bent at an angle similar to the ordinary iridectomy knives, one with a sharp point, and the other with a blunt or bulbous extremity.

As the danger, even if vomiting occurs, is very slight with the form of incision I am about to describe, I usually prefer to have the patient narcotised, and, as a rule, push the chloroform to full anæsthesia. The lids should then be kept apart by the speculum, and the globe gently depressed with a pair of ordinary forceps in the operator's right hand. Having got the eye into a favourable position, it should be fixed by the sharp forceps at about the junction of the upper with the middle third of the cornea. The pointed knife is then entered in the corneo-sclerotic junction, one or two lines from the forceps, at the summit of the cornea, pushed well into the anterior chamber, and, with a gentle sawing motion, the eye being steadied with the left hand, carried along the summit, a distance of three lines. The aqueous will now escape, and if we wish to extract without iridectomy, or if the condition of the globe before and after incision, as regards tension, is such that we have reason to fear excessive bleeding from excision of a portion of iris, it will be well at this stage to open the capsule carefully in its central and lower segments, a proceeding very much facilitated by the small size of the wound, the safety with which the globe may be manipulated, and a previously dilated pupil. If the cornea remains firm, if the lens is readily loosened on incision of the capsule, if the patient is perfectly quiescent, shows no tendency to vomit, and other circumstances prove favourable, we may extract without iridectomy, in which case it will be simply necessary to enlarge the wound in the manner hereafter to be described.

If, from the nature of the case, we have decided on associating an iridectomy with the extraction, and desire to derive

the advantages of an iridectomy, so far as tension is concerned, the iris forceps should now be introduced into the wound, the blades opened, and the iris seized near to its pupillary border, drawn out, and divided at the right hand angle of the incision, carried over and excised at the left as in iridectomy for glaucoma. If, however, tension is quite normal, and the removal of a portion of iris is not likely to have a favourable influence on the after-progress of the case, a very small incision, or the merest slit in the constrictor fibres of the iris, will suffice to reduce the risk from bruising to a minimum, and still to some extent preserve the advantages of a natural pupil. If we have not found it necessary to open the capsule prior to iridectomy, it should now be rendered tense and carefully incised with the ordinary cystotome, the stem of which it is as well to have made either of platinum or soft steel, so that it may be bent in accordance with the projection of the patient's brow, or relative position of the eyeball. Having opened the capsule, and slightly loosened the lens, the eye should be seized to the right of the globe with a pair of ordinary forceps, and the wound enlarged to the left with the blunt-pointed knife (encroaching slightly upon the sclerotic to an extent that experience tells us will, with a similar wound to the right, suffice for the ready exit of the lens; fixing the eye then with the left hand, the process must be repeated to the right. The incision is thus localized in a definite line, and its extent at any period of the operation is only limited by the will of the operator.

If the iris has been left intact, a comparatively large flap will be required, but if iridectomy has either preceded or is associated with the extraction, a very small shallow flap will suffice, one which yields readily to the advancing lens, while it is sufficiently slit-like and elastic to close without artificial apposition or external support, strong enough to resist protrusion by advancing vitreous, and too resilient to permit of accidental reflection.

The lens may now be extruded by slight pressure upon the globe, without passing any instrument into the eye, cortical fragments removed with ease, and any portion of capsule or lens matter likely to obstruct vision, be either torn across or removed with the sharp hook, canula forceps, or sucker.

If, from the existence of firm adhesions, the lens cannot be started by pressure, it should be dipped out with the wire-loop spoon, an instrument which from its extreme tenuity assists the exit of the cataract without adding to its bulk.

If it is desirable to extract by the lower section, the same form of incision may be employed, and this is preferable in a few cases where the lens is superficially softened, as any pulpy cortical matter left behind in the eye will gravitate to the bottom

of the anterior chamber, pass harmlessly through the coloboma iridis, and either undergo absorption, or be washed out with the aqueous. The risk of its lodging behind the lower segment of iris and setting up subsequent irritation is thus avoided, but the section is less sheltered, and the coloboma uglier and more disturbing to vision.

The operation completed, I apply a drop of solution of atropine in the corner of the eye, and cover the lids with a pad of fine cotton wool, dipped in, but not saturated with cold water. If sodden, the pad is heavy, irregular, unmanageable; but just moistened on the surface, it fits accurately into the orbital cavity, and speedily dries into a smooth film, closely bedded to the surface of the lids, absorbing moisture, insuring equable support, a regular temperature, and the exclusion of light. It must be secured *in situ*, with gentle pressure, by thin strips of soap plaster, spread on unglazed calico (which adheres without warming). I find this by far the best dressing. Pressure can be accurately applied by strips fixed to the forehead and cheek, and, if necessary, by an additional broad strap passed from temple to temple. Any kind of compress bandage may also, if required, be readily applied over the pads and plaister. Inflammatory or other complications coming on after the operation must be treated on general principles, such, however, very seldom occur; rest on the couch for 48 hours in a partially darkened room, and confinement for a week, being, as a rule, all the after-treatment required.—*Ophthalmic Hospital Reports, April* 1869, *p.* 197.

76.—TREATMENT OF CATARACT BY PHOSPHORUS.

M. Tavignot, a well-known and much esteemed Parisian oculist, has lately published, in the France Médicale, a series of cases which would go far to prove that frictions on the forehead with phosphorated oil, and instillations of the same into the eye, may contribute to the melting away of the hardened lens or capsule, and the restoration of sight, without the usual operation. These cases are worthy of attention, and should be read by all those who take an interest in ophthalmology.—*Lancet, Jan.* 23, 1869, *p.* 126.

77.—TWO CASES OF ORBITAL TUMOUR, TREATED BY FIRST EXTIRPATING THE DISEASE, AND THEN APPLYING THE CHLORIDE-OF-ZINC PASTE.

Under the care of George Lawson, Esq., at the Middlesex Hospital.

The results of operations for the removal of orbital tumours, and especially of those which are of the malignant class, are gene-

rally so unfavourable, that it is pleasing to be able to record instances in which the disease has been eradicated, and the patient has continued for a long time free from any recurrence. In a visit to this hospital a few days since, we had the opportunity of seeing two patients who had been operated on by Mr. Lawson for orbital tumours, both of which were apparently of a cancerous nature. The first patient was a female in the cancer wards, who was admitted into the hospital as far back as January 30th, 1866. She was then suffering from a scirrhous tumour of the left orbit, and from a small growth of a similar nature on the cheek of the same side of the face. From both localities the disease was excised, and, all hemorrhage having been arrested by the application of the actual cautery, the chloride-of-zinc paste, spread on small pieces of lint, was laid evenly over the whole of both surfaces. In due time the sloughs separated, and the wound on the cheek soon cicatrised; but in the orbit the whole of the bony walls perished from the action of the caustics, and were detached in one piece. The skin now contracted closely round the gap, and the patient soon became convalescent. As it was impossible to say that the disease would not recur, the woman was allowed to remain in the hospital, where she has continued up to the present time, and without any recurrence of the tumours. As it is now nearly three years since the operation, the committee have rightly considered that the patient is no longer a fit subject for the cancer charity, and she has therefore received orders to leave the hospital in a short time.

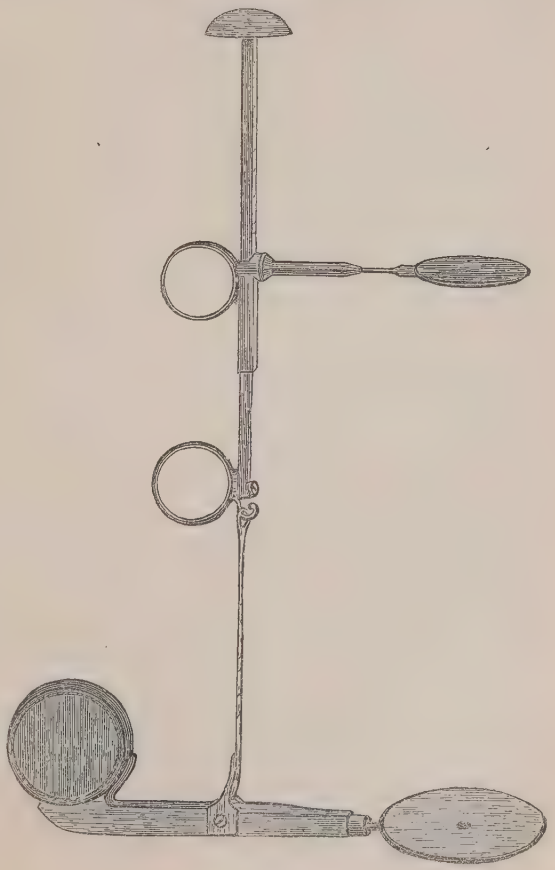
The second patient was only admitted into the hospital on December 1st. The account which he gave of himself was that the right eye was removed last June, on account of an intra-ocular growth, but that very shortly afterwards a tumour began to grow from within the orbit. On his admission, the lids were tightly stretched over a firm, nodulated tumour, which occupied the orbit, and bulged considerably beyond it. Mr. Lawson treated this case in a manner similar to the last one. The pain following the operation was very severe; but it was relieved, and sleep obtained, by subcutaneous injections of one-third of a grain of morphia, repeated as often as his sufferings rendered it necessary.

On the fourteenth day after the operation, we saw the sloughs produced by the chloride of zinc lifted away with a pair of forceps from the orbit. As they were removed, they left the bones which they had covered perfectly bare and blanched. No doubt in this as in the first case there will be considerable exfoliation of bone. If any suspicious-looking granulations should spring up, they will be touched freely with the solid chloride of zinc, or with potassa cum calce.—*Lancet, Jan.* 2, 1869, *p.* 10.

78.—IMPROVED OPHTHALMOSCOPE.

By Henry Greenway, Esq., Plymouth.

This instrument (manufactured by Weiss) is designed to furnish the practitioner with means whereby the eye can be examined with nearly the same steadiness and precision as with the large and expensive apparatus of Liebreich, and with nearly the same amount of freedom as attends the use of the ordinary



Engraving, showing ophthalmoscope complete. Only a small portion of the tape can be seen, as the mirror and lens are represented nearer together than they should be, in order to economise space in the sketch. The remainder of this self winding tape is contained in a box at the lower end of the mirror handle.

hand-mirror and lens. It is simple in construction, and consists of two parts—a double convex lens, mounted on a stem, which slides on a graduated brass bar, five inches long, at one end of which is a knob which rests against the patient's face, the other end terminating in a hook; the second portion comprises a perforated mirror, supported on a handle, from the centre of which runs a spring measuring-tape. These two parts are united by connecting the end of the tape with the hook before mentioned.

To use the instrument for indirect examination of the eye, place the thumb of one hand in a ring, fixed underneath the hook at the near extremity of the graduated bar, and the middle finger in a ring attached to the under surface of the slide, and the forefinger on its upper surface; then lay hold of the mirror-handle with the other hand, in such a manner that the tape may pass between the fore and middle fingers in front, the thumb being placed behind; the patient being seated, in the usual manner, by the side of a lamp, the knob at the extreme end of the brass bar should now be placed against his face, and in such a position that the mounted lens shall be in a line between the spectator's eye and that about to be examined. By withdrawing the mirror-hand from the other, the tape can be drawn out to the required extent (about 18 inches) and be fixed by merely pressing the forefinger on it. The lens focus (from one to three inches) will be obtained by moving the slide to and fro on the graduated bar. By gently pressing the bar towards the patient's face with the thumb of the lens-hand, and by keeping the tape slightly on the stretch with the mirror-hand, the whole instrument will have the steadiness of a solid construction. As a further aid, the surgeon may sit the reverse way on a chair, and and make its back serve as a rest for his elbow. Should the back be too high, a thick book or other substance should first be placed on the seat of the chair.

For the direct method of examining the eye, the presence of the tape will not prevent the mirror being used in the ordinary manner.

A small black card-board screen, to be hung at the side of the patient's head, is supplied with the instrument. This will sometimes be found useful in private practice, where a screened lamp is not at hand.—*British Medical Journal*, *Nov.* 28, 1868, *p.* 573.

79.—AN IMPROVEMENT UPON POLITZER'S METHOD OF INJECTING AIR INTO THE EUSTACHIAN TUBES IN CERTAIN CASES OF DEAFNESS.

By Dr. John Brunton, A.M.

Politzer's method of injecting air into the Eustachian tubes is based upon the fact, that when the *circumflexus* or *tensor palati*

muscle is put upon the stretch in the act of swallowing, the mouth of the Eustachian tube is opened, and air is allowed to enter the tube.

Politzer directs the patient to take a mouthful of water; the operator then inserts a canula into the right or left nostril, as as the case may be; attached to this canula is an India-rubber bag filled with air; on the patient making a sign that he is about to swallow, the operator, closing the nostrils of the patient upon the canula with one hand, so as to prevent all egress of air, as the patient swallows, squeezes the bag, thereby injecting a strong current of air, which immediately rushes up the mouth of the Eustachian tube, which has been opened by the action of the *circumflexus* or *tensor palati* muscle in the act of swallowing.

This method is very useful in many cases, especially those of a catarrhal nature, often restoring the loss of hearing in a manner that seems marvellous to the patient. Nevertheless, advantageous as the operation may be, it has often unpleasant disadvantages. Sometimes, as has occurred to myself, the movement of the patient (the act of swallowing) and the movement of the operator (the act of pressing the bag) are not exactly in unison; and the consequence is, that unpleasant fits of coughing follow by too early pressure of the air, or no injection of air takes place by a too late pressure, necessitating a repetition of the process, which may or may not be very acceptable to the patient.

On account of this, the improvement which is described below suggested itself to me, in consistence with those movements of harmony which abound in the human system. My improvement, as shown by the accompanying woodcut, consists in allowing the patient to be himself both the subject and the operator.

The apparatus consists of an India-rubber bag (10 oz.), to which is attached a sufficiently long flexible tube, so that the bag may rest on the floor. To the other end is fixed a gum elastic canula, which the patient passes into his nostril. He then takes a mouthful of water, and as he swallows, holding his nostrils tight with the fingers, presses the bag with his foot, and thereby injects the requisite air.

I have used this apparatus a good many times, have found it invariably satisfactory, and free from the unpleasant results above-mentioned. The movements are in unison.

The accompanying woodcut represents the patient in the act of applying the instrument. Any instrument maker can supply the apparatus, the cost of which is trifling.

It has been stated that a late distinguished aural surgeon sacrificed his much-valued life, while investigating the means to allay ringing noises in the ears, by the injection of medicated

vapours, such as the vapour of chloroform, ether, hydrocyanic acid, and the like. If he had used such an apparatus as this, perhaps he might have been still spared to us. I have on several

occasions injected the vapour of sulphuric ether and chloroform with ease and without discomfort, to the advantage of the patient. It is only necessary to separate the bag from the tube and pour a few drops of the ether into the bag; the ether immediately becomes volatilized; adjust the tube, and then proceed as with common air.—*Glasgow Med. Journal, Nov.* 1868, *p.* 38.

DISEASES OF THE SKIN.

80.—HOW TO USE THE NITRATE OF SILVER IN ERYSIPELATOUS INFLAMMATION.

By John Higginbottom, Esq., F.R.S., Hon. Fellow of the Royal College of Surgeons of England.

[Mr. Higginbottom complains that his mode of using nitrate of silver has been carelessly and incorrectly reported in all the medical and surgical works which have professedly copied the plan from his published work.]

The method of applying the nitrate of silver is as follows:—

The affected part should be well washed with soap and water, then with water alone, to remove every particle of soap, as the soap would decompose the nitrate of silver; then to be wiped dry with a soft towel. *The concentrated solution of four scruples of the nitrate of silver to four drachms of distilled water is then to be applied two or three times on the inflamed surface and beyond it, on the healthy skin, to the extent of two or three inches.* The solution may be applied with a small piece of clean linen, attached to the end of a short stick; the linen to be renewed at every subsequent application. As the solution of nitrate of silver is colourless, it is necessary to pass a little linen, just moistened, over every part where it has been used, in order to be equally diffused, so that no part be left untouched.

In about twelve hours it will be seen whether the solution has been well applied. If any inflamed part be unaffected, the solution must be immediately reapplied. Sometimes, even after the most decided application of the nitrate of silver, the inflammation may spread; but is then generally much less severe, and is eventually checked by repeated application. It is desirable to visit the patient every twelve hours, until the inflammation is subdued.

By these means we have complete control over the disease.

For the successful application of the nitrate of silver the ordinary brittle stick, either solid or in solution must be used. Not the "lunar caustic points perfectly tough," nor the crystals and cake used for photographic purposes.—*Practitioner, Jan.* 1869, *p.* 34.

81.—ON THE USE OF SULPHUR IN ITCH.

By Dr. Tilbury Fox, Physician to the Skin Department, Charing-Cross Hospital.

[The writer says that not a week passes but he sees cases in which sulphur has been much misused, producing evil instead of good.]

Sulphur is a remedy which can do a great deal of good and a great deal of harm. That I may prevent some of the latter, I again call attention to one or two therapeutical points of practical importance touching the cure of itch, which by reason of its very commonness is apt to have a stereotyped treatment. Now scabies is usually treated as though all the eruptive phenomena seen in the body of a scabious subject were really "scabies;" that is, as though there were some parasite to destroy wherever a rash exists, and acari were present in or immediately about the papules and vesicles of which the erup-

tion in different parts of the body is composed. The fact is, that in the early stage of itch the acari are almost entirely confined, if not absolutely, to the hands in adults, and to the region of the buttocks and feet in children. In chronic scabies, or in disease derived from contact with a person affected with chronic scabies, acari are no doubt present elsewhere, and in parts other than the hands. But in the general run of cases the essential seat of scabies is the interdigits and the wrist. The mass of the eruption about the arms and the body is secondary to the irritation induced by the acari about the hands, and if the acari there be destroyed, the "sympathetic" eruption, if not artificially aggravated, vanishes. Sulphur is the best remedy for the destruction of the itch insect: therefore it should be used (I speak of the majority of cases) to the hands where the acari are; and as it is an irritant to inflamed parts, it should not be hazardously applied to the parts where the secondary eruption exists, for it can serve no other purpose than that of increasing the eruption; and even applied to the apparently sound though irritable skin of a scabious patient, it will induce eruption. Then much of the eruption is the result of scratching the skin to relieve the irritation, its character depending upon the state of health of the patient.

Well, these are very simple truths. But they really require to be repeated over and over again, because the practice of many is to apply sulphur ointment, in a patient affected with itch, to every part that itches; or, indeed, as in the case where the sulphur bath is used, to the whole body. This is a mode of treatment from which I entirely dissent. The specific remedy should be used to the hands as freely as possible, and there only, in the vast majority of cases. There is another point of importance. As sulphur is a stimulant, and if freely used an irritant, of course it is desirable to employ it in the least possible amount, but of course such as suffices to effectually kill the acari. I am sure the ordinary sulphur ointment is much too strong. Usually it contains one part in five. I think one in sixteen (half a drachm to the ounce) is sufficient if combined with the ingredients to be presently noticed. The use of the old sulphur and hellebore ointment should be utterly rejected. Before using sulphur it is well to wash the hands with soap. Then another important consideration is the length of time during which it should be used. Very many practitioners continue the sulphur treatment long after this is at all necessary. They are misled by the continuance of the itching, which they take to mean the continuance of the disease, whereas it is sometimes the result of the action of the sulphur. If the acari are killed the itching ceases, of course, and if we carefully note the patient's condition, we shall find that after a few vigorous

applications to the interdigits and the wrist only, the itching is subsiding, and the general irritation would then soon cease; but if sulphur has been and continues to be, applied to the sympathetic or secondary eruption, the itching is often only increased; and though the true scabies itself (that constituted by the acari in their burrows) is in reality well, the disease is apparently worse, because the secondary eruption has been intensified. Leave off, as I have done in scores of cases that have fallen into my hands, under such circumstances, all sulphur treatment, give a bran bath, and use freely an oxide-of-zinc lotion, and the patient soon gets well. But I have said that there are a few acari scattered about in the midst of the secondary eruption over the body in some cases, especially chronic ones. To kill these it is only necessary to smear over the dark-looking papules about the body, and any eruption along the upper line of the penis, the specific remedy, taking care not to irritate any parts that are "weeping" or "oozing."

These observations relative to the unnecessary irritation of secondary eruptions, apply with special force to the case of children.

I may sum up, then, by saying that in treating scabies we should use the specific remedy in recent cases as freely as we like to the interdigits and wrists *only*, and apply *soothing remedies to the general surface;* that the sulphur should be in small quantity, and that sulphur baths should be discarded. I employ half a drachm to an ounce of lard, with three drops of creasote, and five grains of ammonio-chloride of mercury, a little olive oil, and a drop or two of essential oil. In chronic itch, however, this form of specific remedy may be applied to all eruptions of discrete character. I prefer the three day's treatment of scabies, keeping on the same linen, and then having a thorough cleansing with soap and a clean change. Less after-consequences follow this than more heroic and rapid modes of cure.

I may just say in regard to skin diseases, generally, that sulphur is only admissible in chronic cases where there is an absence of active inflammatory action. We find it said in books that it is good for eczema, psoriasis, acne, erythema, and other diseases. Well, not in the acute or active stage. It does harm. When diseases have become indolent, and the skin needs to be stimulated, then sulphur is of use, and I think then only. I have seen on many faces and many skins a dirty, rough, and slightly reddened surface, difficult of cure, produced by the use of sulphur, very much to the annoyance of patients. Stimulation is constantly effected where soothing is required. The matter is a simple one, as I have said, but important for all that to practitioners.—*Lancet, March* 6, 1869, *p.* 322.

82.—A FEW CURIOUS FACTS RESPECTING HERPES ZOSTER.

By Jonathan Hutchinson, Esq.

Herpes zoster is a disease which offers to the clinical observer some very interesting and important problems. Its non-symmetry and non-contagiousness, its observance of stages and spontaneous disappearance, and its occurrence but once in the patient's life, are well established as general facts, though none of them without occasional exceptions. The first two seem to connect it with the neuroses, the others to ally it to the exanthems. Such being the puzzling position which it occupies, I think the following facts and remarks worthy of publication.

I regard it as certain that special conditions of the blood may so irritate the roots of the sensory nerve trunks as to induce those trunks to cause at the periphery herpetic inflammation. Thus we have a syphilitic herpes zoster, in which the patches are located exactly as are those of common herpes zoster, and clearly under the influence of nerve distribution. But these cases differ from the common herpes zoster in that the eruption is usually on both sides of the trunk and on other parts of the body. It may also last much longer than common herpes zoster does. These circumstances, symmetry of eruption and long persistence, are what we should expect in connexion with the blood cause. Some facts which have recently come under my notice incline me to believe that herpes zoster, in its most typical form, and following its usual course, may be produced by a blood cause. *A priori*, we should have thought it most improbable that a non-symmetrical eruption could occur in connexion with such a cause. The facts to which I refer are a group of cases in which herpes zoster has occurred in patients who were at the time taking arsenic. They have been so numerous that I think their occurrence must be something more than a coincidence. Should further experience confirm my present suspicion, we shall have gained a step in our knowledge of the pathology of herpes zoster, and shall, perhaps, have also furnished another fact to those modern neurologists who hold that the nervous system is less symmetrical in function than has hitherto been supposed.

Case 1.—*Partially Symmetrical Herpes Zoster occurring in a Patient who was taking Arsenic.*—The following notes were taken about three years ago, and describe the condition of a patient who was kindly sent to me by Dr. Hughlings-Jackson. It was of special interest both as an example of symmetrical herpes, and because it came on during an arsenic course. I have described its positions in more detail than would otherwise have been requisite because of its occurrence on both sides.

"A robust man, aged 67, is attending at the London Hospital, under Dr. Hughlings-Jackson, for sciatica, and has been taking five-minim doses of liquor arsenicalis. He is now the subject of herpes zoster, which began a few days ago. He says he had very trifling pain when the rash began to come out. It first appeared behind his right ear. It now covers the right side of his neck, his right shoulder as low down as the spine of the scapula and the right side of the front of his chest as low as the upper border of the third rib. On the front of the right arm it extends as low as about two inches below the axilla. The vesicles are quite characteristically those of herpes zoster, with some tendency to ulcerate in parts. Looking at the front of his chest, the inflammation of his skin stops abruptly at the middle line, but at a distance from this, on the left side, there are a few isolated small patches of vesicles over precisely the same area as is affected on the other side. There are a few isolated vesicles on the left side of the neck, but they are only to be seen when looked for very carefully. There are none on the left side of his cheek nor behind the left ear; none on the left front of his neck. Thus the disease is fairly symmetrical as to the areas affected, but occurs very much more severely and copiously on one side than the other. The amount of irritation has been much less than usual."

Case 2.—Arsenic administered in a Case of Eczema—Herpes Zoster on the Trunk a fortnight later.—A man, aged 32, was admitted at the Hospital for Skin Diseases, in January, 1866, for eczema, &c. Three-minim doses of Fowler's solution were ordered. A fortnight later he had a free eruption of shingles on the right side of the chest. The arsenic was continued. The shingles went through the usual course, and soon disappeared. On November 30 he again attended for a relapse of the original eruption. On examination it was found that the shingles had not left any perceptible scars. It had been a mild attack.

Case 3.—Herpes Zoster on Lower Part of Abdomen one Week after beginning an Arsenical Course.—A man, aged 66, was admitted on September 7, 1866, with eczema rubrum of the legs, and amongst other treatment arsenic internally was ordered. On September 18 there was a free eruption of herpes zoster on the right side, in the iliac region, and side of abdomen. He had taken the medicine about a week before the herpes showed itself.

Case 4.—Herpes Zoster Six Weeks after beginning an Arsenical Course.—A woman, aged 48, who attended in December, 1866, had been taking arsenic six weeks for eczema. At the end of that time herpes zoster showed itself on the right side of the chest, and went through its usual course.

Case 5.—Herpes Zoster Frontalis Three Months after commencing the Use of Arsenic.—A woman, aged 44, admitted on April 9, 1867, on account of psoriasis, had six minims of Fowler's solution ordered three times a day. On June 14 the dose was reduced to three minims. On July 12, her psoriasis being now nearly cured, she was attacked by herpes zoster frontalis in the right side. The herpes was of no great severity, and it disappeared as usual although the arsenic was continued.

Case 6.—Herpes Zoster of the Buttock after Three Months' Use of Arsenic.—A boy, aged 8, the subject of complicated and chronic skin diseases (lichen, &c.), took small doses of arsenic from November to March, when he had herpes zoster on the left buttock.

Case 7.—Herpes Zoster during the Use of Arsenic.—A girl, aged 14, admitted on January 1, 1867, with psoriasis of the scalp, took arsenic from that date to the 29th, when she had herpes zoster on the right side of trunk.

Case 8.—An Eruption resembling Herpes in Arrangement, but not Vesicular, during Treatment by Arsenic.—A man, aged 50, who was taking arsenic, had a curious unsymmetrical eruption arranged just like shingles, but which remained papular, and never showed vesicles. It disappeared, as usual with shingles, after about ten days' duration.—*Medical Times and Gazette, Dec.* 26, 1868, *p.* 722.

83.—ON THE TREATMENT OF CARBUNCLE.

By James Paget, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

Although you may not have seen much of it, you must all have heard of the ordinary manner in which carbuncles were treated formerly, and still are by some; a method which consists mainly in making large incisions through them, and giving very large quantities of food and stimulants, as well as considerable doses of quinine, bark, and other tonics. I do not at all mean to say that the things which in these cases I left undone would have done any harm; but what I hold of them is, that they would have been quite useless, and some would have been sources of great discomfort to the patients. And in the way in which I speak of these things you may notice that I exemplify that rule which I have always impressed upon you, of asking yourselves, when you seem to have been successful with some medicine, "What would have happened if I had not given it?" The apparent consequence of giving a medicine may be plain enough; but you cannot too often repeat to yourselves the question—as a rule, I will not say of practice, but of the study

of your own practice,—"What would have happened if this or that, which seems to have been successful, had not been done?"

First, with regard to the incisions made in carbuncles. The ordinary plan, still recommended by some, is, as soon as a carbuncle is seen, to make two incisions crucially from border to border. It is said that they must go even beyond the edges of the carbuncle into the adjacent healthy textures. I have not followed that method of practice very often, but I have followed it quite often enough to be sure that it does not produce the effects which are commonly assigned to it. It is commonly said that if you will thus make crucial incisions into a carbuncle, you will prevent it spreading. If you can find a carbuncle two or three days old, and cut that right across in both directions, I think it very likely that you will prevent it spreading. But even therein is a fallacy; for there is no sign by which, on looking at a commencing carbuncle, you can tell whether it will spread or not, whether it will have a diameter of an inch, or of three, six, or ten inches. The question, therefore, that I spoke of comes back, "What would have happened if I had not made these incisions?" And the answer to that question will be rather according to temper than according to knowledge. For as I watch men in their conclusions upon such cases as that, I generally find that self-satisfaction says, "I saved the man's life;" self-dissatisfaction, "I did him no good." The truer scientific temper stands midway, and says, "I will wait for further information on the matter—till I have seen more cases, and then decide whether, in the earliest stages of carbuncle, incisions are useful or not." After this time of three or four days I have seen sufficient numbers of carbuncles thus divided, and have divided enough for myself, to say that it will not hinder the spreading. I have seen carbuncles spread in as large a proportion of cases after incisions as in cases that have never been incised at all. I have in my mind a striking case that occurred to me early in practice, when I followed the routine, and, in a friend of my own, divided a carbuncle most freely. I cut it after the most approved fashion in depth and length and width, and then it spread. After two or three days more all the newly-formed part was cut as freely as the first, and then it spread again, and again it was cut as freely. Then it spread again and was not cut. Then, in a natural time, it ceased to spread and all went on well. These are only general impressions that I give you, because one cannot count the cases in which cutting has been practised, and those similar cases in which it has not; nor even then could it be said whether those in which the cutting was practised would have spread if left alone. On a very strong general impression, however, I say

that carbuncles will spread after cutting in as large a proportion of cases as they will spread in without cutting.

Then it is said that carbuncles are relieved of their pain if they are thus very freely cut. Here, again, however, is only a partial truth. A carbuncle of two or three days' standing, which is hard, tense, and brawny, is very painful; and cutting it will relieve, in many cases, a considerable portion of the pain. But after this, when the carbuncle begins to soften, and when pustules begin to form upon its surface, and pus in its interior, it ceases to be painful of its own accord, and without incisions. Thus there are two distinct stages of carbuncle in reference to the pain; the early stage, when it is hard and still spreading, and is generally intensely painful, and the later stage, in which that pain nearly ceases. A carbuncle divided in the first stage, in the first two or three days of its existence, may be relieved of some of its pain; if divided in the later stage, what little pain may exist is altogether unaffected by the cutting. And even cut as you may, you cannot always put aside the extreme pain that a carbuncle sometimes has, even to its later time. Some two or three years ago, I was called to a member of our profession with a large carbuncle in the middle of his back. His friends had been much alarmed about the state of his mind, for he had been suffering great mental anxiety for some time, and they were in fear lest the excessive pain of the carbuncle should, in its disturbed state, do his mind permanent damage. So they persuaded me to cut it, and I cut it after the old plan, very wide across, and far into the adjacent textures, as freely as could be. It did not in the least relieve him. I never saw a carbuncle through its whole course so painful as that was, and up to the last, till the healing was nearly completed, he suffered more or less pain in it. So that the conclusion in reference to pain must be this: if they can be divided in the first three or four days, while still hard and brawny, it may relieve some measure of the suffering; at a later period the incisions have no influence at all.

The third point is stated thus, that by the incision of carbuncles you accelerate their healing, giving facility for the exit of sloughs. But herein is the greatest fallacy of all. When the cutting of carbuncles was more customary in this hospital than it is now, when I did not cut them, and some of my colleagues did, I used to be able to compare the progress of cases cut and of cases uncut, and time after time it was evident that the cases uncut healed more readily than those cut. A man who is now in the hospital I have brought round here that I may illustrate this point to you. This is the man, Timothy C., aged fifty-five. When he came in, this carbuncle had a length of more than six inches, and a breadth of three and a half; and it

formed the ordinary hard, compact, tense, and brawny mass that a carbuncle usually does. It had at that time already taken to suppurate, and little pustules were pointing on the surface. If I had followed the practice of incisions, I should have had to make a cut in one direction of about seven inches, and in the other of about five, and after that I should have had not only the wounds wide, open, and gaping, and having themselves to heal, but a great part of the substance of the carbuncle fairly exposed, and also under the necessity of healing. But you will observe that the whole of the space that now remains to heal is a series of openings in the middle of the carbuncle, through which the sloughs are to be separated, through which, indeed, nearly the whole of the sloughs have already been discharged, and which now merely remain to be healed like the cavities of small abscesses. In that way you narrow greatly the extent of wounded surface to be healed. Indeed, it by no means always follows that the whole carbuncle, or its whole base, sloughs. Carbuncles, if not divided, not unfrequently only suppurate about their centres, and slough only in their central parts, and the borders merely clear up by the softening and dispersion of the inflammatory products in them. In every case of that kind you save greatly the amount of healing which has to be gone through. Nay, in some cases carbuncles completely abort. One of these cases, of which I have the paper on the table, was that of a woman, aged 64, who came in with a carbuncle nearly as large as this, in a condition which, it might be said, required incision at once; but, with the exception of two or three small points, no suppuration or sloughing ensued. That carbuncle dispersed, aborted, cleared away. This case shows the more ordinary course of events—the sloughing of the central part, the gradual discharge of the sloughs, and the comparatively small spaces which are left in the centre of the carbuncle as the sole space in which the process of healing has to be achieved.

On these three points, which are the grounds that have been assigned as reasons for cutting carbuncles, I have now given you the evidence on which I have ceased from the practice. I fully believe that crucial incisions do not prevent extension; that it is only a limited set of cases in which the incisions diminish pain; and that with regard to the time that is occupied in healing with or without incisions, the healing without incisions is very clearly and certainly a great deal the quicker.

The kind of incisions that I have been speaking of is the old plan of crucial incisions. Another method which I have occasionally tried, but of which I can only state the same general results, is that of subcutaneous incision. This has been supposed to have the same general effect as the other; and I think

that the same general conclusions may be drawn respecting it: that it is a measure unnecessary in the treatment of carbuncle, and that it retards rather than hastens the healing. When I speak thus of the incision of carbuncles, however, I do not mean to say that there is no condition of carbuncle in which an incision is not useful. Sometimes a carbuncle sloughs in its central part, with one continuous slough of integument holding in a quantity of pus. In that case you would cut through the slough, or through any adjacent part of the carbuncle, to let out the pus, as you would open an ordinary abscess. But this is not a measure which is commonly understood by the "incision of a carbuncle."

If you ask why one may not cut a carbuncle though it may do no good, I reply that you should never be actively useless, and that there are some cases in which the cutting does considerable harm. Carbuncles, for the most part, occur in persons broken down in health, exhausted by over-work, or by bad food, or in general deteriorated health—as sometimes in diabetes or albuminuria; and in all these states it is a good general rule to save the blood they need for healing. The loss of blood from the carbuncle itself would not be considerable; the hard substance of the carabuncle, when cut into, does not bleed, or bleeds but little. But to carry out the incision perfectly, you have to cut into the adjacent healthy texture; and this sometimes bleeds very profusely, so as to lead to all the distress and pain of plugging the wound with this or that substance to arrest the blood.

Another measure in the treatment of carbuncles which is supposed to be necessary, is very high feeding and large quantities of stimulants. I learned the opposite of this in one of those cases which you will do always well to study—those, namely, in which the patient refuses to do what you advise him. It is from such cases that we may often learn what is commonly called the "natural history of disease"—its course undisturbed by treatment. A case occurred to me once of an old gentleman, eighty years of age, who had a carbuncle, as big as it could be, on the back of his neck, for it extended from one ear to the other, and from his occipital spine to the third cervical vertebra. He measured it for his own amusement, and it was fourteen inches over its surface transversely, and nine inches vertically—a carbuncle, then, of the largest size, and one, it might have been supposed, attended with considerable risk to life. I urged him very strongly to take a large quantity of what is called "support," for I was at that time under an impression of its necessity. He absolutely refused, however, and nothing would induce him to take it. I was therefore content to stand by and study the natural history of disease in this

huge carbuncle; and the natural history of it was a history that one would have wished to witness in every carbuncle of its size, for no case could pass through its course in a better method. He led his ordinary abstemious life, took moderate quantities of food and stimulant, lived through a carbuncle of the greatest severity, and finally made a complete recovery, and lived for several years after.

Another case which impressed me very much was that of a friend of my own in the profession, who had a carbuncle on the back of his neck, of very considerable size. Sir Benjamin Brodie and Mr. Stanley attended him with me, and under their advice the carbuncle was cut. I watched its course afterwards, and felt sure that the cutting had done neither good nor harm. It went on as carbuncles do when not cut. But the gentleman was subject to intense headaches, of which he knew by experience the only possible remedy was almost entirely to leave off food, and absolutely and entirely to leave off stimulants. One of these headaches occurred during the course of the carbuncle, at a time when we had put him on full diet and abundant stimulant. He said then that he must leave off his stimulants and food, and we looked with some alarm at what would be the result on the progress of the carbuncle. I remember Mr. Stanley saying to him, in his distinct manner, "My dear fellow, if you don't take food, you will die." "Very well," he said, "then I will die, but I will not take food and increase my headache." According to his own wish, therefore, we reduced his diet to a very low level. The course of the carbuncle was not affected at all, unless it were for good; and after three or four days of this, which might be called comparative starvation, he described himself in his own emphatic fashion as being "as jolly as a sand-boy."

Since that time I have watched carefully all cases that I have seen, and I am certain that there is no good to be obtained by large feeding or abundant stimulants in ordinary cases of carbuncle. The whole of these cases that have been in the hospital were put on our ordinary meat diet, with a pint of porter daily; and I see that two of them have had four ounces of wine a day, one of these being a person aged 64 and the other 63, and both having carbuncles of considerable size. You will find that for patients in private life it will do very well if you tell them that they may have about two-thirds of their ordinary amount of food, and about the same proportion of their ordinary quantity of stimulants. But indeed there is scarcely any reason to change in any material degree the ordinary mode of life of a patient with carbuncle. So far as he can with comfort take that to which he is accustomed, so far he may. If his diet has been habitually low, so it may remain; if habitually

high, so, within certain limits and somewhat reduced it may still remain.

Now you may ask what I should set down as the things to be done for a carbuncle. These boards, nearly bare as they are, may tell you. In local treatment one of the best things you can do, if the carbuncle is small, is to cover it with emplastrum plumbi spread upon leather, with a hole in the middle through which the pus can exude and the slough can come away. That, occasionally changed, is all the covering a small carbuncle will need. It is difficult thus to cover the whole surface of a large carbuncle, and to keep it clean; therefore, I think that the best application for that is the common resin cerate. This should be spread large enough to cover the whole carbuncle, and over it should be laid a poultice of half linseed-meal and half bread. And, if you want to exercise your skill, learn to make that poultice well, and to put it on well, and to keep it in its place well. That mode of dressing the carbuncle, so far as the materials are concerned, will last through its whole course: but whilst the carbuncle is making progress and discharging its slough, you will find plenty of room for the exercise of considerable skill in dressing it, and filling up the cavities with soft substance spread with this ointment. Besides this, the carbuncles are to be carefully washed, and especially with some deodorising substance, as Condy's fluid, or weak carbolic acid, and the cavities may be syringed out with it. The importance of cleanliness is very great. You noticed in the man I showed you just now the spots of acne and boils round the edges of the carbuncle. This points out the necessity of care, which I suppose had not been taken there, to keep the surface of the skin adjacent to the carbuncle perfectly dry, and free from any contact with the discharge, which seems really to have the power of infecting the neighbouring skin, and so producing the boils which are apt to arise, sometimes in clusters, around the carbuncle. Of diet I have already spoken to you. Of medicines I say nothing. Quinine, bark, and other medicines of that class, may be given if you please, or in case of evident need, and so many aperients; but there is really no need of them in an ordinary case of carbuncle. But there is one medicine which you may find very valuable, and that is opium, especially in all the earlier painful stages of carbuncle, in which it relieves the suffering as thoroughly as incisions, or any thing I know. After the early stages, even that is unnecessary, except for some patient who may be unable to sleep.

But there is one measure in the treatment of carbuncle which is seldom employed, and yet is of great importance, and that is letting the patient have very free air. The general idea that carbuncles are very dangerous diseases has commonly led to the

patients being entirely confined to bed and kept shut up in their rooms. There is in that an unnecessary care; and this, too, I learned from a patient who refused to comply with injunctions —a gentleman with a large carbuncle on the back of his head, who would not keep his bedroom. He had been accustomed to an active life, and after seventy or eighty years of that custom he was quite indisposed to remain in his room. So with that carbuncle he daily came down stairs, changing his room and moving about the house as well as the pain and weakness would allow him. No carbuncle could go on better; all the stages were passed through without any risk or trouble, it healed with unusual speed. After that I had a yet more striking case. A lady came to London "for the season," as she called it; and she had not been here more than a week or ten days before a carbuncle came out on the back of her head, just under her hair. It was a great vexation to her that she had to give up all her amusements; and so, as she did not mind the pain, she would go out. And it was then that, for the first time and last, I saw any value in a "chignon." She dressed her carbuncle under the chignon, and she went to the park, to the theatre, and to dances unharmed, and with her carbuncle quite unseen, and no trouble whatever followed. It healed up after the ordinary fashion and in about the ordinary time. But, indeed, you may see cases of this description on a much larger scale if you watch the carbuncles that come to us in the out-patients' room. There we often see them of considerable size, and they do as well among the out-patients as among the in-patients; and yet these out-patients are freely in the air all day, and many of them continue at their work. So you may set it down as one point to be attended to in the management of carbuncles that patients should not be confined to their room. They should at least have change of air in their own house; and, unless they are too low, they should not avoid exposure to the fresh open air.

Treating your cases of carbuncle upon this plan, I believe you will find that the great majority will pass through their course well.—*Lancet, Jan.* 16, 1869, *p.* 73.

SYPHILITIC DISEASES.

84.—OBSTINATE CASES OF ACUTE AND CHRONIC GONORRHŒA, SUCCESSFULLY TREATED BY INJECTIONS OF GLYCERINE OF TANNIN.

From cases under the care of J. D. Hill, Esq., at the Royal Free Hospital, London.

Perhaps no surgical disease is so frequently observed in hospital (out-patient) practice as gonorrhœa, and the treatment which is

advocated by surgical authorities cannot in many instances be surpassed; occasionally, however, troublesome cases will arise, both in the acute and chronic form of the disorder.

In these cases, previous to the employment of any kind of local or constitutional treatment, whether alone or in combination, several circumstances, Mr. Hill thinks, have to be considered.

First, it is necessary to determine the occupation, habits, and constitutional peculiarities of the patient; or, in other words, what assistance, both from within and without, can be brought to bear upon a purely local affection. Secondly, to overcome local difficulties, which are both physiological and mechanical in character; and these may be briefly said to consist in the mobility of the affected part, its dependent position, and the occasional contact of an irritating fluid—the urine.

The treatment which Mr. Hill tells us he has extensively employed in hospital and private practice was, he believes, first introduced by Dr. Ringer, of University College, who has kindly favoured him with the following remarks:—"For some time past I have been making observations with an injection of glycerine of tannin in chronic gonorrhœa and gleets, and have found it of great use, especially in gleets, which I believe may be removed more quickly with this injection than perhaps any other. In the acute stage of the disease a little care is necessary, or great pain is caused. This may be prevented by diluting the glycerine of tannin with equal parts of mucilage. Another point to attend to is that the injection should not be injected too far, or it causes a great and frequent desire to make water."

Mr. Hill is therefore enabled to support the experience of Dr. Ringer, not only by recent cases, but also by observations on the treatment of gonorrhœa by tannin and mucilage injections extending over some years. These injections he first used in the proportion of ten grains to the ounce, but latterly, as suggested by Dr. Ringer, he found the glycerine of tannin more serviceable, slightly modified, however, as to the diluting agent.

The precaution alluded to as to injecting is probably a most important one, whatever be the lotion employed; for although in some few instances the fluid may be injected too far, in the larger number it will not be injected far enough. Now in either case the surgeon is blamed for a fault which in reality rests with the patient; and here it may not be out of place to describe the method which Mr. Hill recommends to all patients using injections:—

"The bladder having been first emptied, the bottle containing the lotion is to be well shaken, and about two drachms of it briskly poured into a saucer. This must be quickly drawn into a glass syringe with a bore in the nozzle equal to a No. 6 catheter.

The penis is then to be held in the left hand, with the thumb and little finger respectively placed upon the superior and inferior portions of that organ close to the symphysis pubis, and the fore and middle fingers resting in like manner upon the superior and inferior surfaces of the glans close to the meatus urinarius. The syringe, with the piston withdrawn, is now to be taken up with the right hand, and the nozzle as far as its shoulder carefully passed into the urethra. Previous to injecting, the thumb and little finger of the left hand must compress the root of the penis, in order that the urethra be closed against the passage of any fluid beyond this point. When a sense of tension is felt, the syringe may be withdrawn; but the front fingers must previously be so applied as to compress the glans, and thus prevent any escape of fluid from the meatus. Next, with the thumb and forefinger of the right hand the fluid in the urethra is to be set in motion, and so kept for four or five minutes. This will be attended with a gurgling noise from the mixture of air and fluid. Thus, when the injection has so insinuated itself within the folds and lacunæ of the urethra as to saturate the openings of the follicles and mucous glands, and permeate the whole of the affected structure, it is allowed to escape."

It is conceived that by these means the bladder is protected on the one hand, and on the other there is a certainty of the fluid being applied to the affected surface of the urethra.

Mr. Hill has furnished us with the notes of six cases in which the glycerine of tannin would appear to have been of great service. In several, injections of zinc, lead, and alum had been employed without much benefit. The formula employed was the following:—Glycerine of tannin, three ounces; olive oil and mucilage, of each one ounce.—*Lancet, March* 20, 1869, *p.* 398.

MIDWIFERY,

AND THE DISEASES OF WOMEN AND CHILDREN.

85.—ON IMPROVED METHODS OF INDUCING AND ACCELERATING LABOUR.

By Dr. Robert Barnes, Lecturer on Midwifery at St. Thomas' Hospital.

[The results of the modes of inducing premature labour usually followed have not appeared to Dr. Barnes to be very satisfactory. There is for instance no certainty about the time at which labour commences, and when it comes the child is liable to be expelled somewhat suddenly in the absence of the medical man. Moreover, owing to the frequent excess of liquor amnii when the child comes to present, it is liable to assume an unfavourable position, or the cord falls through. Hence it follows that it is desirable to keep a control over the whole course of the labour.]

Assuming that it is both desirable and possible to control and to regulate the entire course of labour prematurely induced, I will describe the method after which the proceeding should be conducted. It is convenient to divide the act of artificial labour into two stages. *The first stage is provocative and preparatory*; this includes some amount of dilatation of the cervix uteri, and implies a certain amount of uterine action, and lubrication of the cervix and vagina. *The second stage is the accelerative or concluding stage;* it consists in the expulsion or extraction of the fœtus and placenta.

The ordinary modes of conducting an induced labour almost ignore the last stage, or the means of accelerating delivery.

1. *The provocative and preparatory stage.*—The means of preparing the uterus for the task prematurely thrown upon it are numerous. I will not discuss their relative merits in detail, as I have done this in a memoir on "The Induction of Premature Labour," in the Obstetrical Transactions, 1862; but I think it important to repeat an emphatic warning against one of them. I mean, the plan of injecting water or other fluid into the uterus. This was introduced by Schweighäuser and Cohen; and is sometimes described as Kiwisch's plan. But Kiwisch's plan is simply to inject water into the vagina, playing the stream

against the os uteri, not into the cavity of the uterus. Now Kiwisch's plan is generally harmless, but it is certainly often useless. On the other hand, Cohen's intra-uterine injection, although far more certain in its action, is fraught with extreme danger. *Both in this country and abroad several cases of severe shock and of sudden death have been caused by it.* Of course no advantage, or convenience, however great, can counterbalance such a danger. The plan, therefore ought to be rigorously discarded. There are means that are perfectly safe and effective.

It is important to recognise, *in limine*, the essential difference between provoked premature labour and labour at term. *In the premature case, labour finds the uterus in an imperfect state of development.* This condition involves imperfection in the contractile power of the body of the uterus, and greater resistance in the cervix. These things must be taken into account. They call for artificial aid. The uterus is called upon suddenly, and before its time, to do that for which it is not prepared. It is but reasonable to anticipate that help will often be useful. And help can be given to facilitate the dilatation of the cervix, and to supplement the contractile energy, if this cannot be aroused. The course I adopt is as follows: Having determined as closely as possible the period of gestation, I fix the day for the operation. On the evening of that day, the patient being in bed, I pass a No. 8 or 9 elastic bougie into the uterus, as far as it will easily slip in; it will generally go in to the extent of four to six inches. The end projecting beyond the os is then twisted up into the vagina; this keeps the bougie *in situ*. The patient keeps her bed for the night, so as not to disturb the bougie. Next morning, it will almost always be found that some degree of preparatory action has been effected. The cervix will be softer, and perhaps admit the finger; the vagina will be well lubricated with mucus; and some uterine contraction or pains will be present. If this should merge into active labour, the bougie may be withdrawn; otherwise it may be left or replaced. Towards the afternoon, the cervix will be more yielding and expanded. The further course must then be determined by the special indications of the case. If the pelvis be normal, and the labour have been induced on account of constitutional disease, it is generally better not to resort to any active accelerative measures, but to let the labour take its own course. When the cervix will admit of two or three fingers, if active pains are not present, it will, however, be desirable to tap the membranes by making a small scratch with a stilet or a quill. The drawing-off of a little liquor amnii, allowing the uterus to collapse, commonly stimulates it to increased activity, and in a few hours the child may be expelled. It is, of course, necessary to watch, lest the position of the child should become unfavourable, or the cord

become prolapsed; circumstances, I repeat very likely to occur in premature labour.

If the labour have been provoked on account of pelvic distortion, greater assistance will be required. The first difficulty to overcome is the resistance of the cervix uteri. The great agent in dilating this structure is *the direct pressure upon and within it* of the fœtus and membranes distended by liquor amnii. But when the brim is contracted, this pressure can rarely be exerted effectually. Hence the tediousness and the danger attending the *laissez-faire* or expectant treatment. The child may perish from long compression; the mother may be exhausted by protracted pain and shock. To avoid these dangers, it is now necessary to dilate the cervix by means that imitate as nearly as possible the natural agency. Introduce the caoutchouc water-dilator into the cervix, taking care that the narrow middle part of the bag be gripped in the ring of the cervix; then distending it gently and slowly with tipid water, the finger on the cervix takes note of its effect. In half-an-hour or an hour, the middle sized bag will commonly have increased the dilatation so that the cervix will admit three or four fingers. This is the time to rupture the membranes. If the uterus act with sufficient power, and the pelvic contraction be not so great as to impede the passage of the child's head, watch, and let nature do her work. But if the head is delayed at the brim, the physician must intervene. He has two alternatives. He may first try the forceps. If the distortion is moderate, the conjugate diameter measuring say 3·50″, the head may come through. But if it do not come easily, and especially if the conjugate is reduced to 3·00″ or below, turning is the true accelerative means. If I may trust my experience, I should, without hesitation, say the prospect of a child being born alive under the conditions postulated is much better than under any other mode of delivery, and even better than is the prospect under turning in ordinary circumstances at the full period of gestation. The explanation is as follows: the child's head is not only smaller, but it is more easily moulded; it is caught at the smaller or bi-temporal diameter, between the projecting promontory and the symphysis pubis; the jutting promontory leaves abundant room on either side in the sacro-iliac region of the brim for the cord to lie protected from pressure; and if care be taken that the cervix uteri be adequately expanded, the head comes through so quickly that the danger of asphyxia is not great. The mode of turning demands consideration. The object being to secure a quick delivery, the soft passages must be well prepared. We might turn by the bi-polar method without passing more than two fingers through os uteri. But I have found that, although it is always well to avail ourselves more or less of the bi-polar principle to facilitate turn-

ing, it is desirable in this case to pass the greater part of the hand through the cervix to grasp the further knee. The reason is this: the cervix that will admit the hand will in all probability admit the ready transit of the child. We thus secure adequate dilatation.

When the turning is completed, extraction must follow. It should be performed gently, drawing upon the one leg until the breach has passed the outlet; the extraction of the trunk should be slow, and a loop of cord should be drawn down to take off tension. When the arms are liberated, the neck of the child is in danger of being constringed in the circle of the cervix. This is the moment for acceleration. The two legs are held at the ankles by the left hand, whilst the right hand fingers are crutched over the back of the neck. The head is sure to enter the contracted brim in the transverse diameter; it then has to describe the circle round the point of the jutting promontory which I have described ('Lectures on Obstetric Operations,' Med. Times and Gazette, 1868) as "the curve of the false promontory." Traction must, therefore, at first, be carefully exerted in the direction of this curve or orbit; that is, well backwards, so as to bring the head round and *under* the promontory. When it has cleared the strait and is in the pelvis, the occiput commonly comes forward, and traction is changed to the direction of Carus' curve, to carry the head through the outlet Unless rigorous attention be paid to the above rule for bringing the head through the brim, so much time may be lost as to imperil the success of the operation.

Turning, as a mode of delivery in contracted pelvis, is not, I believe, yet established as an orthodox proceeding. Certainly to be successful it requires precision in diagnosis and skill in execution. But these are requisite conditions in all surgical operations. I have now, with tolerably mature experience of the operation in all its applications, no hesitation in expressing my opinion that turning in contracted pelvis, where labour is induced prematurely, is an operation of the highest value as a means of extricating the mother from peril, and of saving the child. It has this great advantage: it enables us to postpone the induction of labour for two or three weeks or more, so as to reach a stage of greater development of the child. If, for example, we preclude ourselves from turning, and the pelvic contraction leave only 3·00″ or less of conjugate diameter, we must bring on labour at the end of seven months, or spontaneous delivery may be defeated, and with this the child is lost: whereas, if we contemplate turning, the gestation may be allowed to go on till the end of eight months; for a living child may easily be drawn through a conjugate of 3·00″. A further advantage obtained by this postponement consists in the greater probability of hav-

ing to deal with a viable child. If we calculate too closely, say from the first week after the last menstruation, and fix the induction of labour 220 days from that time, we may find that the child has really not attained a stage of development corresponding to our calculation. One design of the proceeding is thus frustrated by error of estimation. But if, on the other hand, we feel confidence in putting off the labour until the 250th day, we cover this range of liability to error, and secure a child that is at any rate viable.—*St. George's Hospital Reports, Vol.* 3, 1868, *p.* 111.

86.—ON STRICTURE OF THE INTERNAL OS AS A CAUSE OF MISCARRIAGE.

By Dr. William Marshall, Mortlake, Surrey.

Mrs. D., aged 30, a delicate woman, five months advanced in pregnancy, was taken with labour pains about six o'clock one evening. I saw her at 8.30. The pains were strong and forcing, very similar in character to those which immediately precede the expulsion of the head in a primipari. I was told that when pregnant last she had miscarried at the fifth month, and that the pains then, for three hours, had been very severe—much worse than she had ever had them in any confinement, and similar to what they were now. On examination, I found the os uteri dilated to the size of half-a-crown, and very soft. On passing my finger further up in order to feel the fœtus, I found the canal of the cervix becoming decidedly narrower, when suddenly she cried out that I was cutting her, and jerked herself away. On a second attempt the same thing was repeated; but on a third, being prepared for her moving, I ascertained that a tight resisting constriction existed at the internal os, which would not admit the tip of the finger. As soon as I touched the constricted part, she complained of a severe cutting pain; and on attempting to pass the finger through it, she became hysterical, and on my persisting, *perfectly maniacal.* On withdrawing my finger she immediately became rational, and complained of the agonizing pain I had caused her.

As she was quite positive that in her previous miscarriage she had suffered for three hours as much as she was doing now, I waited for a couple of hours. During this time the pains were very strong, and the suffering greater than I had ever seen in any confinement. In order to make a thorough examination, I put her under chloroform. The external os was very soft, and dilated; but at the internal os there existed a constriction which still readily allowed the finger to pass through, and which seemed now quite dilatable. The breech was presenting, and I had no doubt that when a pain came it would be

pushed through, and the whole thing soon be at an end. The pains, however, did not return as long as I kept her under chloroform, so that I was forced to discontinue it. The stricture returned with the first pain, firmly grasping the tip of my finger, which I had retained in the uterus. I now gave her a dose of ergot, and waited until one o'clock, when, finding that little or no progress had been made, I determined to notch the stricture in one or two places, under chloroform, as it was impossible to touch it without causing intense pain, and bringing on a maniacal paroxysm. I went home for a probe-pointed bistoury, and on my return in half-an-hour, found the strictured part, with the breech forced into it, protruded through the external os, which was drawn up around it. After a few pains, the breech passed through the constriction: I pulled down the body, and finding that the head would not come, pushed my finger past it, hooked it over the crown, and pulled the head through the stricture. Without drawing my finger, I detached the placenta, and withdrew it and the finger at the same time. While doing all this, the patient was perfectly maniacal—she shrieked, kicked, struck and bit at those around her. Immediately on withdrawing the finger she became rational, and apologised for what she had done; the agony had been so intense, she said, as to drive her for the time out of her senses. She recovered without a bad symptom.

To one interested in uterine pathology, this case is, I think, of considerable interest.

Firstly, With regard to the stricture itself, it is remarkable (1) that a stricture should have existed in such a spot; (2) that it should have been so exquisitively painful to the touch; (3) that the pain should have given rise to paroxysms of hysterical mania. May not some forms of puerperal mania depend upon a uterine lesion acting on an hysterical system?

Secondly, That the stricture was the cause of the miscarriage in this and the previous pregnancy I have no doubt. I have never seen this mentioned as a cause of premature labour. The uterus up the fifth or sixth month of pregnancy, grows and expands almost entirely in its upper part. At that time it enlarges downwards from the internal os; but in this case the stricture would not allow it to expand, and by continued irritation, induced labour pains.

Thirdly, If this be true, it throws some light upon "What is the cause of labour?"—a point, I believe, still undetermined. If you examine the uterus at the eighth month, you find a considerable portion of the neck still unexpanded; if you examine at the end of the ninth month, you find the neck entirely obliterated. What happens then? Does the uterus stop growing? No: it still continues to enlarge downwards, and it can only do

so by dilating the os. Had this stricture been situated at the external os, the uterus would have gone on growing until the end of the ninth month, and then, just as in the miscarriage, by irritation of the stricture, labour pains would have set in. It is not necessary, however, to invoke the aid of a stricture at the external os to induce labour pains. The os is the most sensitive part of the whole organ ; to dilate or irritate which is to bring on pains. This the natural growth of the uterus does ; then, those contractions of the uterus, sometimes painful and sometimes painless, which occur every hour or two during the latter months of pregnancy, recur with greater frequency ; the membranes and the head of the child are pushed down upon the os, exciting it more and more to induce pains by reflex action, until finally the labour is accomplished. This I have long regarded as the explanation of the cause of labour : the natural expansion of the uterus, acting on the sensitive os, begins to dilate it, and through it reflexly the necessary pains are called forth.—*Glasgow Medical Journal, Feb.* 1869, *p.* 156.

87.—CARBOLIC ACID IN THE SICKNESS OF PREGNANCY.

By Edward Garraway, Esq., Faversham, Kent.

Carbolic acid is the only remedy which I have ever found of any avail in pregnant sickness, and of its efficacy here I entertain no doubt whatever. Patients who have had it in one pregnancy, invariably ask for "that tar medicine" in the next. In other forms of sympathetic vomiting, it has proved no less valuable. I quote the two most noteworthy cases I have met with, premising that I am not given to exaggerate.

Miss ——, aged 19, a highly hysterical girl, the subject of pelvic abscess, had vomited every meal immediately after swallowing it for three years. Physic and physicians, of course, had been exhausted upon her. I gave a drop of carbolic acid three times a day. She retained this from the first. After ten doses had been taken—*i. e.*, on the fourth day—a meal was kept down ; and from this time she retained alternate meals. In a fortnight, two meals out of three stayed ; but the unwonted presence of so much food in the stomach occasioned such distress, that I was induced to partially withdraw the remedy, and allow two out of four meals to be rejected. The carbolic acid, however, was gradually persevered with ; and, in the course of a year, the stomach was able to bear and retain four meals a day.

Mrs. ——, at the eighth month of gestation, engaged me to attend her, and complained that she had been sick throughout her pregnancy. I declined prescribing, assuring her that the

vomiting would cease immediately after delivery. However, it persisted as before; and she then informed me that for nine years she had never passed a day without vomiting, sometimes several times. This condition resulted from an attack of fever. I waited a fortnight after her accouchement, and then put her upon carbolic acid. She never once vomited again. The remedy was continued a fortnight, then gradually withdrawn.

I give drop-doses of the crystal, liquefied by heat, and diffused in half an ounce of thin mucilage, three times a day.—*British Med. Journal, March* 13, 1869, *p.* 235.

88.—ON THE DIAGNOSIS OF ACCIDENTAL HEMORRHAGE FROM PLACENTA PRÆVIA.

By Dr. Edward Calthorp.

The os uteri being unopen, and therefore a physical demonstration of the placenta impossible, any evidence by which we can determine between the two conditions mentioned at the head of this paper must be of value: I speak of the diagnosis of placenta prævia from accidental hemorrhage in the later months of pregnancy.

We all know, who have had experience in midwifery, the soft, velvety, hot feel of a gush of uterine hemorrhage, when that takes place the hand being in the vagina. It is from the character of the discharge we are to form our diagnosis in the present case.

In a case of placenta prævia—say at the sixth month—the discharge, if any, is blood "pur et simple," and on examination the vagina is most likely full of, or at least contains, clots. In a case of accidental hemorrhage, the discharge is liquor sanguinis, and the vagina free from clots; and it is easy to understand how this is. The blood in placenta prævia comes direotly from the uterine or placental vessels, or both, into the vagina, and is there discharged as blood, leaving coagulations behind in the vagina; whereas, in accidental hemorrhage, the blood, before being discharged, has to find its way to the os, separating the membranes as it comes down and depositing its fibrin, so that the discharge is liquor sanguinis, and the vagina is free from clots. How often, in a case of accidental hemorrhage arrested and gone to full term, do we not find, on the placenta being expelled, a large mass of fibrin discharged with it (I have more than one in my possession, and have seen numbers). In like manner, after a confinement in which perhaps a small piece of membranes has been left behind in utero, serving as a nucleus, do we not find the discharge "dirty water," as the nurse says, the uterus large, above the pubes, and the patient weak and

blanched; the fibrin is deposited, and the liquor sanguinis discharged; and the mass, if allowed to remain in utero, prevents the proper contraction of that organ, and is often the precursor of disease, retroversion, &c., and may account for the moles, "false conceptions," &c., so frequently described. But this is scarcely belonging to my subject.

Finding no mention, then, in any authority of this mode of diagnosis (one of many) between these most serious complications, and knowing, by experience, that it is fully to be relied upon, except in cases in which the placenta is very near the os, or the hemorrhage very profuse, must be my excuse for publishing these few rough notes.—*Lancet, April* 3, 1869, *p.* 458.

89.—ON A CASE OF POST-PARTUM HEMORRHAGE.

By Dr. F. E. Wilkinson, Sydenham.

The following case may be of some interest as introducing a new mode of arresting uterine hemorrhage. In the year 1860, I was called upon to attend Mrs. G., an hemorrhagic patient (a lady of the middle class), in her first confinement. Parturition was tedious, both from the length of time occupied, in consequence of the insufficiency of the uterine action, and from the occurrence of persistent vomiting; and delivery was accomplished with the aid of the forceps. The placenta was expelled by the natural efforts some twenty minutes after, but the uterus contracted feebly, and shortly afterwards severe hemorrhage took place. I was here ably assisted by my son, Dr. G. F. E. Wilkinson, then a student of medicine, and with his aid ergot and food and stimulants were administered, and cold injections thrown up, but with no success; slight contraction taking place, but the uterus then becoming perfectly flaccid. Hemorrhage continued, and the patient became rapidly depressed. The pulse at the wrist was almost imperceptible, and there appeared every reason to apprehend immediate dissolution. At this trying juncture I observed a large sponge lying in the room; and as both my hands were engaged in endeavouring to control the fearful hemorrhage, I directed that the sponge should be threaded with some strong string, and washed in cold water, when I squeezed it into as small a compass as possible, and introduced it into the uterus. Immediate contraction took place round the sponge, and after gently applying a bandage over the abdomen, and persisting in feeding for some hours with liquid food at frequent intervals, the pulse became gradually more perceptible, and the patient was rescued from a state of imminent danger. The sponge was expelled into the vagina upon the third day, and was removed by the attached string

without difficulty, and the patient recovered more rapidly than could have been expected after such a loss of blood.

I have since used the same plan in several cases of uterine hemorrhage in my own practice, and when I have been called in to assist other practitioners, and it has been attended with unvarying success. I believe the plan to be valuable (as in the case I have recorded) in some apparently hopeless cases.

No doubt the elasticity of the sponge keeps up a constant regular pressure upon the whole of the internal superficies of the uterus, whilst its spiculæ also stimulate the uterus to contract.

I have been in the habit of injecting a weak solution of carbolic acid to arrest fetor, both before and after the sponge is removed; but if it were desired to apply any other remedy, such as the solution of the perchloride of iron, &c., it could not be applied better than by injecting it into the sponge. But one great advantage of this plan of treatment is that it can do no harm.—*Lancet, Feb.* 13, 1869, *p.* 223.

90.—THE INJECTION OF PERCHLORIDE OF IRON IN POST-PARTUM HEMORRHAGE.

By Dr. Robert Barnes.

[Dr. Barnes recommends the use of perchloride of iron as an injection in cases of post-partum hemorrhage, where other means of arresting the bleeding have failed.]

A very convenient preparation is the liquor ferri perchloridi fortior of the British Pharmacopœia. Half a pint of this may be carried in the "obstetric bag," and when wanted it may be diluted to a quart by adding a pint and a half of water. This dilution should be put into a small deep basin. The syringe most convenient is Higginson's, fitted with a uterine tube about nine inches long. My syringe has a common mount, which is made to fit either the elastic dilators or the uterine tube. Care should be taken that air is not sucked up into the syringe. To avoid this, keep the entrance-tube of the syringe at the bottom of the fluid, and pump through back into the basin until the syringe is filled with the fluid. The apparatus being ready, pass the left hand into the uterus, clear away all placenta and clots, then slip up the uterine tube along the palm of the hand, so as to carry the end of the tube up to the fundus of the uterus; then compress the syringe gently and steadily, so that the fluid may trickle down over the whole inner surface of the uterus. The pumping may be repeated until the basin is *nearly* emptied —not quite, lest air be taken up. As the iron acts by coagu-

lating the blood in the mouths of the vessels, and mere contact is enough for this, it is unnecessary to pump with any force.

The effect of this injection is to corrugate the inner surface of the uterus, and commonly some degree of muscular contraction follows. I have hardly ever known any more hemorrhage to occur after one injection. Henceforth the patient is safe from further loss; and if not already too far exhausted by previous loss, there is nothing to prevent the patient's recovery.

I have practised this plan for several years, and in a great number of desperate cases, where kneading, compression, ergot, cold in every form, had failed, and I have seen no bad consequences from it. Practised with the precautions I have laid down, I believe it is in itself safe, and I am certain that not a few lives have been rescued by it from otherwise imminent death.

I have also used it in cases of excessive flooding attending abortion. But where the uterus is small, and the cervix not admitting more than the finger, I now prefer to apply the styptic on a swab, such as a common probang. I have a strong suspicion that in one case of early abortion, an injection made too forcibly by means of a caoutchouc bottle was the cause of a fatal catastrophe. The patient died almost suddenly soon after the injection, with symptoms resembling those consequent upon air entering the circulation.

This, the only accident I am acquainted with, suggests caution. But in a desperate emergency, like flooding, we must be prepared to encounter some risk, rather than suffer the patient to lose that little stock of blood in which the life of the patient lingers.—*Lancet, Jan.* 30, 1869, *p.* 175.

91.—OBSERVATIONS ON A CASE OF SUDDEN DEATH AFTER DELIVERY, FROM EMBOLISM OF THE PULMONARY ARTERY.

By Dr. W. S. Playfair, Assistant Obstetric Physician to King's College Hospital.

By *embolism* we mean those cases in which a portion of fibrine is detached from a clot in a blood-vessel, and is carried through the circulation until it becomes impacted in another, and possibly very distant, part of the circulatory system, where it may become the nucleus round which fresh fibrine is subsequently deposited. When the fibrine is deposited *in situ*, in the place where it is found after death, the term *thrombosis* is the one which should be used; and it is to be observed that every case of *embolism* must necessarily be preceded by *thrombosis*, for, unless a throm-

bus or clot exist in some part of the circulatory system, there is no deposited fibrine from which an embolus can be detached.

Although the words can be used in reference to any part of the vascular system, I would wish to be understood as referring more particularly to those cases in which fibrine is found obstructing the right side of the heart and pulmonary arteries; cases which, in reference to the puerperal state, are of extreme importance to the accoucheur, and deserve the most careful study.

There can be no doubt that embolism in this situation has been more generally considered the cause of sudden death after delivery than thrombosis. This is the view that has been maintained by Virchow, and by Wade and others who have written on the subject in this country. In fact the possibility of the coagulum forming *in situ* has been almost entirely overlooked. In the paper above alluded to, I ventured to maintain a contrary opinion. I then said: "I believe that a careful examination of the now numerous instances of sudden death after delivery will show that in a large proportion of them there was no history whatever of peripheral phlebitis or venous obstruction from which an embolus could be derived." I am pleased, therefore, to find that Dr. Richardson, who has devoted much attention to the point, considers true embolism to be comparatively rare; and points out, very graphically, how the heart and pulmonary arteries are, from their anatomical arrangements, a likely situation for the separation of fibrine.

It seems to me that the term *embolism* should never be applied to cases of fibrinous obstruction in the heart and pulmonary arteries, unless two conditions are met with on *post mortem* examination. One is the existence of a clot in some part of the peripheral venous system, from which an embolus can be derived; the other is the existence in the pulmonary clots of separate travelled portions of fibrine, corresponding in structure to the peripheral thrombus, round which more recent fibrine is generally deposited. If no clots exist in any of the veins, the case clearly cannot be one of embolism.

Many cases have been carefully examined in which the existence of true pulmonary embolism is beyond all doubt. The following, in which the travelled embolus was not only found, but the exact site from which it was detached also determined, is so remarkable that it seems to me to be well worthy of record.

Jane W., 21 years of age, was admitted into King's College Hospital, under the care Mr. Henry Smith, early in the month of December 1868, suffering very severely from intense pain on defecation, which was ascertained to depend on a fissure in the rectum. She was then in the sixth month of her third pregnancy. Two years ago she had suffered in the same way, and her symptoms was then so severe that Mr. Smith had operated

on her, although she was then far advanced in pregnancy. No unfavourable results followed, and she had gone to the full time, the rectal symptoms having been greatly alleviated. Encouraged by his former success, Mr. Smith determined to operate again, and this was accordingly done on the 5th of December.

On December 7th, she began to complain of pain in the back, accompanied by a slight discharge of blood, when she was at once removed into a separate ward. Opiates were administered, and the usual treatment for averting premature delivery resorted to. For several days it was hoped that labour might be prevented; for, although slight uterine contractions recurred every now and then at long intervals, the os remained unopened, and there was no discharge. The appetite was good, the pulse quiet and regular, the pain on defecation much diminished, and the patient was in every other respect apparently in perfect health.

Things went on exactly in the same way until December 13th, on the morning of which day she had one or two very slight pains, but was otherwise cheerful and well. Late on the evening of that day, however, her pulse and temperature gradually rose without any evident cause, and at 10 p.m. her pulse was found to be 160, her temperature 103, and her respirations 40. She complained of no pain, and there was nothing to show what could be the cause of this sudden change. Shortly afterwards she vomited a large piece of undigested meat, showing no sign of mastication, which, she stated, she had swallowed accidentally when disturbed during her dinner on the same day.

At 1.30 a.m., uterine contraction had increased in strength; the pulse being now 104, the temperature 100. At 5.45 a.m., the entire contents of the uterus were expelled, the membranes being unruptured.

The condition of the patient was noticed by Mr. Pedler, the resident accoucheur, to be at this time as follows: "She was suffering from extreme dyspnœa, the countenance was excessively pale, her lips white, the face generally expressing *extreme* anxiety. The uterus was well contracted. No pulse could be felt at the wrist, nor at the posterior tibial artery. The sounds of her heart were almost *nil*." In fact, she had all the symptoms of obstruction at the right side of the heart, most characteristically developed. Stimulants were administered freely. The patient called incessantly for air, and said she was being suffocated. She died at 7.45 a.m., and during the last few seconds of her life the face was convulsed.

A *post mortem* examination was made eight hours after death by Dr. Kelly, the pathological registrar to the hospital, from whose notes the following account is abridged. On opening the thorax, the lungs were found collapsed; there were no adhesions or fluid in the pleura; the lungs themselves were quite healthy,

unusually light, and containing very little blood. The bronchial mucous membrane was a little congested, and there was no frothy mucus nor pus in the tubes. The heart weighed nine ounces, and was quite healthy in structure. The right side of the heart was extremely distended, and also the large veins of the neck and the two cavæ; the left ventricle was small, and the pulmonary veins were nearly empty. The right side of the heart was filled with a soft black coagulum, on the upper surface of which was a little discoloured fibrine; it had all the appearance of a recent *post mortem* clot. At the bifurcation of the pulmonary artery, plugs of firm fibrine were found obstructing the passage of the blood, more especially on the left side, where they extended for about an inch and a half into the primary divisions of the pulmonary artery. Beyond these the arteries were nearly empty, containing only a little fluid blood. These clots were of a yellowish or buff colour, very firm, but not moulded to the vessel in which they lay, and were very different from the soft gelatinous clot in the right ventricle. They were of a leathery consistence, and were not surrounded by any black coagulum. On section, they were all uniform in colour, and partially laminated, with the exception of one, which lay across the pulmonary artery, and was nearest to the heart. In the centre of this, was found a piece of fibrine, of the shape of an almond, and three-quarters of an inch long, surrounded by, but separate from, the remainder of the fibrine, which was of less firm consistence. At its base was an irregular surface, which fitted closely to a corresponding rough surface in a clot in the iliac vein. The valves of the heart and large vessels were quite healthy in structure, and none of the clots were adherent. At the junction of the internal and external iliac veins on the right side was a clot of fibrine about two and a half inches long, adherent at its distal end to the internal iliac vein, while its other extremity was free and lay in the common iliac vein, but not filling up the whole of its canal. About its centre was the roughened portion previously described, from which the nucleus in the pulmonary clot seems to have been detached. The uterus was perfectly healthy and well contracted, and its veins contained no coagula.

The symptoms which caused the death of the patient were so characteristic of obstruction of the right side of the heart and pulmonary arteries, that no other diagnosis was possible. They are precisely those which have been described in numerous cases of the kind which have been recorded. The very careful *post mortem* examination conducted by Dr. Kelly clearly showed that this was a true case of embolism. For, first, was found the firm coagulum obstructing the right iliac vein, showing a ragged portion at the juncture of the right with the common iliac vein,

which looked exactly as if a piece of fibrine had been detached from it, and markedly different in appearance from the smooth surface of the coagulum at every other part. Then in the pulmonary arteries were found various masses of fibrine obstructing their calibre, and in the centre of one of these a separate nucleus of fibrine, differing in texture from that surrounding it, and presenting at one extremity a jagged portion, *which accurately fitted the corresponding point in the iliac clot.*

It is very clear, therefore, what had occurred. At some period during the eight days which elapsed between the operation and death, a coagulum had formed in the iliac vein. The portion found in the centre of the pulmonary coagulum had become detached, and was carried through the venous circulation until it was arrested in the pulmonary artery. This, probably, corresponded with the sudden rise in the pulse and temperature on the evening preceding delivery. During the night, the fresh fibrine which surrounded it was deposited, and the pulmonary arteries became more and more obstructed until death ensued. The original coagula in the iliac veins seem to have caused no symptoms, or at least none that were observed.

This explanation of the phenomena is necessarily theoretical, but it is, I believe, the only one which will fully account for the symptoms, and it is strictly in accordance with what has been observed in other cases which have been recorded. There is one difference, however, between this and every other case of undoubted pulmonary embolism after delivery, which I have yet met with, which is worthy of remark. I have shown by an analysis of twenty-five cases after delivery that, in twelve which were probably due to embolism, the death occurred a considerable time after delivery—generally after the nineteenth day; while, in the remaining fifteen, where the coagulum apparently formed *in situ*, the fatal result occurred at a much earlier period. I explain this curious difference on the supposition that embolism must be preceded by the formation of a blood-clot in some of the peripheral veins, in consequence of a similar blood-dyscrasia to that which produces primary coagulation in cases of pulmonary thrombosis, and occurring about the same time after delivery, and it is not till then the clot so formed has had time to change and soften that a portion of it becomes detached and carried through the circulation to the heart.

In the case above narrated, however, the embolus seems to have been detached *before* delivery. The difference is probably due to the fact that the iliac clot was formed during some portion of the eight days which elapsed between the operation and the death of the patient; and its original deposition may have been produced by some blood-changes resulting from the operation itself. In the absence of any definite data as to the exact time

at which it was formed, there is nothing to prevent us from believing that a sufficient period had elapsed to allow of those retrograde metamorphoses of the fibrine which favour the separation of a portion. As this is the only case in which death so nearly coincided with delivery, and as it was preceded by an operation, it seems a very fair inference that the operation was in some way the determining cause of the coagulation in the iliac vein, from which the embolus was derived. There can be no doubt that the alteration in the blood due to pregnancy favoured the recurrence; but, beyond this, it is questionable whether the delivery itself had anything to do with it; and I see no reason to alter the conclusion at which I formerly arrived, "That embolism usually occurs at a much later period after delivery than thrombosis; and that spontaneous thrombosis probably corresponds with, and is due to, some cause similar in its nature to that which produces the obstruction of the peripheral veins in true cases of embolism.—*Brit. Med. Journal, March* 27, 1869, *p.* 282.

92.—PROLAPSUS UTERI OF SEVENTEEN YEARS' STANDING CURED BY OPERATION.

Under the care of Mr. Norton, at St. Mary's Hospital.

The patient, whose case is appended, is at the present time—a year and a half after the operation—a milk carrier in London; and though the weights she bears are excessive, there has been no return of the disease, nor have there been any bearing-down pains. She continues in perfect health.

Mrs. M. had laboured under the severe effects of an extensive prolapse of the womb since the birth of her last child, a period of seventeen years. She stated that she was unable to walk, or in any way to gain a livelihood, and that she was only free from pain when lying down.

On examination, the uterus was found altogether external to the vagina. It was much enlarged, thickened, and indurated, and around the os, and upon different parts of the vagina, were several small ulcerations. Pessaries of various forms had been used to support the womb, but without effect.

Mr. James Lane saw the patient with Mr. Norton, and it was determined that the operation which Mr. Lane had performed on several occasions should be adopted.

On the following Wednesday Mr. Norton removed an elliptical piece of the mucous membrane about three inches and a half in length, by two in breadth, from the vesical wall of the vagina. The cut margins were then brought together by means of ten silver-wire sutures, and the uterus returned to its normal position. The bowels were confined by opiates to the sixth

day, and then relieved by castor oil. The vagina was syringed daily with warm water, and after eight days the sutures were removed.

Fourteen days after the first operation, Mr. Norton removed by a horse-shoe incision rather more than an inch of the mucous membrane of the posterior and lateral walls of the vagina, including the cutaneous margins of the fourchette. The denuded surfaces were now approximated as in the operation for ruptured perineum, and were firmly fixed by means of silver-wire quilled sutures. The projecting lips were more evenly adapted by a second row of wire sutures somewhat deeply placed. As on the previous occasion, the bowels were quieted by opiates throughout the week. The quilled sutures were removed after forty-eight hours, and the others in seven days. On the removal of the quilled sutures a few drops of pus exuded, and the parts around showed some little redness and induration, but these symptoms were relieved by a bread-and-water poultice.

Within a fortnight after the second operation the patient left the hospital entirely cured.—*Lancet, Jan.* 23, 1869, *p.* 121.

93.—ON THE DIAGNOSIS AND TREATMENT OF UTERINE POLYPI.

By Dr. George H. Kidd, Obstetric Surgeon to the Coombe Lying-in Hospital, Dublin.

A polypus in the cavity of the body of the uterus causes the whole organ to grow in the same way that the ovum does in early pregnancy. Hence the cavity becomes enlarged and elongated, and the walls thickened and hypertrophied. If the polypus be of any size the fundus of the uterus will be felt in the hypogastric region, of irregular form, it may be, depending on the form of the polypus. When the enlargement is not so great it may still be recognized by the finger in the vagina, and the fundus may be traced by the bi-manual method of Marion Sims, but even though we have hemorrhage and the other symptoms enumerated, along with an elongated uterine cavity as measured with the sound, and an enlarged and irregular fundus, we cannot absolutely declare the existence of a polypus, inasmuch as all these signs, like the symptoms, may depend upon other causes.

Moreover, not only may these signs and symptoms exist without there being any polypus present, but we may have a polypus without any enlargement of the uterus, as when it grows in the cervix, and is of the small size usual in this situation, or when, even though in the cavity of the body of

the uterus, it is of such small size that the elongation of the cavity, as measured with the sound, is scarcely appreciable; and yet, small as the growth is, it may, if not removed, run the patient down by hemorrhage.

The only certain proof of the existence of a polypus is the detection of it by the eye or finger, and, therefore, when from persistent hemorrhage or other cause, we suspect the presence of such a growth, and cannot otherwise discover it, we must dilate the uterine canal so as to be able to pass a finger to the very fundus, and make a minute and careful digital examination of the cavity throughout its whole extent.

[The use of sponge tents for facilitating exploration of the uterine cavity dates from 1844, when they were introduced by Sir James Simpson. They have, however, several disadvantages, such as requiring repeated applications of them, to get at the cavity of the uterus, and becoming fœtid when allowed to remain a few hours in the uterus.]

The sea-tangle is free from all these objections, and seems to me not only to supply the boon to surgery desired by Marion Sims, by being an efficient, pleasant, and cheap substitute for sponge tents, but to be more easy of application, more prompt in dilating the uterus, and above all, more safe in its action.

When the uterine tissues are relaxed by hemorrhage, a fine tent can be passed at once through the whole length of the cervix and on to the fundus, and by a little care a number of fine tents can be packed alongside of one another in the canal, when a single large one, though not nearly of the size of the bundle so formed, could not be passed at all. The first tent introduced serves as a guide to the others, and when they absorb fluid and swell out, they not only dilate the os internum as much as the os externum, but also the cavity of the uterus itself, and and thereby provide room for the manipulations necessary for the removal of the polypi, if any are found to exist.

I first used sea-tangle tents in the manner now described in the case of a lady, residing some miles out of Dublin, whom I was asked to see by my hospital colleague, Dr. Sawyer, on the 4th of May, 1867, on account of persistent hemorrhage, when it answered the purpose so well that I have ever since adopted the same method, and with the most satisfactory results. In one case, where the patient, though married seven years, had never borne children, the os was so small that it was necessary to leave a single fine tent in it for some time before a sufficient number could be got in to effect a dilatation large enough to admit the finger, but it is the only case I have met with out of a large number where such a proceeding was necessary.

When it is determined to explore the uterus after this manner the patient is placed in the usual obstetric position, and the length of the uterine cavity is carefully measured by means of the sound. A No. 5 or 6 sea-tangle bougie is now cut into pieces a little longer than the uterine cavity, and the ends rounded off and smoothed. The patient is now desired to put her left arm behind her back, and to lie almost completely on her face, with her right leg drawn up and thrown in advance of the other—that is, in the semi-prone position of Sims. The "duck-bill" speculum is now introduced and given to an assistant to hold, the anterior lip of the os uteri seized with a fine tenaculum, the os having been brought into view and steadied in this manner, as many of the pieces of sea-tangle as can be got in without using force are passed one after another, till they almost touch but do not press on the fundus. Five or six pieces of a No. 6 bougie will dilate the uterus sufficiently for all purposes; and when these have been got in, the tenaculum and speculum are withdrawn and the patient is settled in bed, when a morphia suppository may be administered. If the uterus make expulsive efforts, it may be well to leave a pledget of cotton in the vagina; but if the tents do not actually touch the fundus, the uterus does not generally try to expel them.

At the expiration of twenty-four hours the exploration may be proceeded with. The tents are easily removed by seizing them, one after another, with a toothed forceps. The patient must now be brought fully under the influence of chloroform, and then placed in the semi-prone position as before, when the anterior lip of the uterus must be laid hold of by means of a large strong vulsellum, and slowly and gradually, but steadily, drawn down to the vulva. If the blades of the vulsellum be not strong and firm they will spring at this stage of the operation and tear the uterus, and the instrument must be made so that the points when closed will fairly meet and glide past one another without making fresh openings in the tissues, and when completely closed the blades must have ample space between them for the lip of the uterus, that it may not be in any way compressed, no matter how firmly the handles are held.

The uterus being brought down and fixed in this way, the vulsellum is given over to an assistant, who is directed to hold it steadily, and the forefinger of the right hand is now passed up into the uterus and its interior carefully examined, which will be much facilitated by placing the left hand over the fundus and pressing this part down on the finger. If a polypus be discovered a tolerably fine vulsellum is now passed along the finger in the uterus, and guided by it to the tumour, which is then seized. The finger is now withdrawn, and an ecraseur, armed with a single soft iron wire, is passed in, guided by the

vulsellum in which the polypus is held. The loop of the wire is first passed over the handle of the vulsellum, and then the point of the ecraseur is placed against the blades of the vulsellum and run up as far as it will go.

The finger may now again be passed into the uterus so as to press the wire well down on the polypus; but if the eye of the ecraseur be passed well up to the uterine wall it will of itself draw the wire into its place. When the ecraseur is fixed in its place it is held steadily, and the wire slowly screwed up till it cut through the peduncle, when ecraseur, polypus, and vulsellum all come away together. The finger should now be again passed in, and if no more tumours be discovered the interior of the uterus may be brushed over with a saturated solution of the perchloride of iron in glycerine, and the patient may be put to bed and allowed to sleep off the effects of the chloroform. For a few days the vagina should be syringed out with tepid water.

I have now operated in many cases by this method, and I have also tried the plan of passing the entire hand into the vagina instead of drawing down the uterus, and also the plan of pressing down the uterus by a hand placed over the hypogastrium without passing the hand into the vagina or using any vulsellum for drawing it down, and am convinced that these methods do more violence to the surrounding parts, are less efficient, and are more irksome to the operator than the proceeding just described. If the polypi be large and come into view, or can be seized, the drawing down of the uterus is, of course, unnecessary; but when they are small and concealed from view, I am convinced the foregoing is the safest way of operating.

Intra-Uterine Fibrous Polypi.—Intra-uterine fibrous polypi arise most frequently from the fundus of the uterus, or that portion lying between and above the openings of the Fallopian tubes, but they may also arise from some portion of the walls of the body, and are very rarely met with springing from the walls of the cavity of the cervix. Arising in any of these situations the polypus commences as a round submucous elevation which in general becomes pedunculated, and suspended with its largest portion free in the distended cavity of the uterus, but it sometimes remains sessile. In either case it may in the progress of its growth come to rest on and close the os internum, forming there a sort of ball valve, and preventing the exit of any fluid that may be poured into the cavity of the uterus. More frequently the tumour passes through the os, and (the peduncle becoming elongated) is gradually extruded from the cavity of the uterus, when it may be found either completely or partly protruded through the os externum, and may be easily recognized and easily removed. Generally speaking, they are single, but not unfrequently we find rudiments of smaller ones,

consisting of submucous round elevations adjoining large polypi. Klob, indeed, says that sometimes two are found flattened from contact, but rarely more than two, and in the majority of cases only a single one; and West, contrasting them with fibrous tumours on the outer surface of the uterus, which are seldom solitary, and often very numerous, says, it is rare to find more than one projecting at the same time into the cavity of the uterus. This he thinks due probably to there not being room for more than one tumour at a time within the cavity of the womb, for it is not a very uncommon thing, he says, some months after the removal of one growth, to find another occupying the same situation, producing the same symptoms, and calling once more for a recourse to the same operation. In one case, however, twenty-nine fibrous polypi were removed within twelve months, at four operations, three at the first, nine at the second, eleven at the third, and six at the fourth. In this respect the case is, so far as I can learn, unique, no similar one having been recorded by any author with whose writings I am acquainted.

Case.—Menorrhagia lasting Fourteen Years—Twenty-nine Fibrous Polypi Removed from the Cavity of the Body of the Uterus at Four Operations.—Miss A., an unmarried lady, aged 36, was placed under my care by Dr. Martin, one of the physicians to Jervis-street Hospital, on the 22nd August, 1867, and admitted by me as a patient into the ward for diseases of women, in the Coombe Lying-in Hospital. She had been a governess, but had been reduced to poverty by ill health, consequent on menorrhagia, from which she had suffered for 14 years. During this time she had been treated by several physicians, and in many hospitals; but, till she came under my care in the Coombe hospital, and I insisted on being allowed to do so, no examination of the uterus had been made. When I examined it I found it enlarged so that the fundus could be felt above the pubes. It was somewhat irregular in its outline, and its cavity measured an inch longer than it ought to do, but the os and cervix were apparently quite healthy. She was blanched from the loss of blood, her extremities were œdematous, her breathing was short and panting, and her debility was extreme. On consultation with my hospital colleagues, Drs. Ringland and Sawyer, and with Dr. Beatty, who kindly saw the case with us, it was agreed to explore the cavity, and for this purpose six pieces of sea-tangle were introduced on the 5th of September, 1867, in the manner just described. On the following day the finger was passed into the cavity up to the fundus with great ease, and so well was the canal dilated that we could even see one of the tumours lying above the os internum. Three tumours, each as large as a pigeon's egg, were found and removed with the ecraseur. The patient was kept in bed for a week, but suffered no pain

or inconvenience, and at the expiration of ten days left the hospital.

For a time the menorrhagia ceased and she improved in health, but the hemorrhage gradually returned, and in the month of March, 1868, she applied to be re-admitted into the hospital. The uterus was enlarged even more than it had been before, and again we dilated it and found a group of tumours filling it up. Dr. Beatty was still good enough to lend his valuable assistance, and with his help and that of my colleagues, I removed nine polypi, some of them large and pedunculated, others as small as a pea and sessile.

She recovered from this operation quite as well as on the previous occasion; but, although every tumour that could be discovered was carefully removed, the uterus never resumed its normal size; it remained large, and could still be felt above the pubes. The next menstruation was, however, healthy, both as to the quantity and character of the discharge; but in April the hemorrhage returned, and in May it was as bad as it had ever been, if not worse. The uterus was now greatly enlarged; it could be felt above the pubes as large as a man's shut hand, and the sound passed into its cavity nearly four inches. On the 16th May we again delated the os, which was as small and apparently healthy as ever. We now removed eleven tumours, four of which were pedunculated and grew from the fundus, and were nearly as large as any of those that had been previously removed; the others were smaller and sessile.

After they were all removed we painted over the whole surface of the uterus very freely, with a saturated solution of the perchloride of iron in glycerine. For some days after the operation there was fulness, with pain and tenderness, in the lower part of the abdomen; but these symptoms quickly yielded to the use of poultices and injections of tepid water into the vagina, and on the tenth day the patient was able to be up and going about. The uterus, however, scarcely diminished in size. The os closed completely, and got into its normal state, as it did after the previous operations, but the body remained large and prominent above the pubes. No menstrual or other discharge took place till the 29th June, when it again occurred, and became hemorrhagic in character and very profuse. Consequently, on the 11th July, I again dilated the uterus, assisted as before by my hospital colleagues and Dr. Beatty, and by Drs. Churchill, M'Clintock, Atthill, and Collis, and I removed six tumours, one as large as a hazel nut, the others smaller in size.

After their removal I applied strong nitric acid freely over the whole of the inner surface of the uterus. On the next day the patient expressed herself as feeling less uncomfortable than after any of the previous operations; the pulse was 104; there

was no tenderness of the abdomen; and the only complaint she made was of having a very offensive discharge from the vagina. I had ordered her a grain of opium every second hour after the operation. I now prolonged the interval to every fourth hour, and ordered the vagina to be syringed out, and a poultice to be applied over the hypogastrium. The following day the pulse was down to 96, and there was no fulness, pain, or tenderness, and the day after the pulse was down to 80. There was some purulent discharge from the vagina, but not offensive, and she wished to sit up, which, however, was not allowed, but the poulticing and opium were discontinued. I believe this is the first time strong nitric acid has been applied to the interior of the uterus. I used it at the suggestion of Dr. Ringland, to whom we are, I believe, also indebted for the first suggestion to use this acid in affections of the os and cervix.

The uterus diminished much in size after this operation; it sunk down into the true pelvis, and could no longer be felt above the pubes. On the 1st of August, exactly three weeks after the operation, I made a careful examination. The os was closed, the cervix was in its normal condition, there was no discharge. Examined by the bi-manual method of Marion Sims the fundus could be found regular in its outline, but rather larger than natural, and when measured with the sound its cavity was found to be nearly an inch longer than it ought to be. This patient was kept in the hospital, partly that she might have the benefit of good nourishment, and partly to watch the case; but as the next menstruation was perfectly healthy, she became anxious to leave, which she did on the 9th of October, 1868, and in a short time afterwards undertook engagements as a visiting governess, which she has since continued to fulfil. On the 6th January, 1869, she called on me at my own house, and reported that her menstruation had continued quite healthy—that the periods since she had left the hospital had lasted only four days each, and that she only required to use two napkins each day, notwithstanding that she had to walk a great deal, even during the period, in attending to her pupils. She said she felt strong and well, and "had got a blush in her cheek," all of which her appearance confirmed. —*Dublin Quarterly Journal, Feb.* 1869, *p.* 10.

94.—RECENT EXPERIENCE IN OVARIOTOMY.

By T. Spencer Wells, Esq., Surgeon to the Queen's Household.

Since last October I have completed the operation of ovariotomy in this Hospital in thirty-six cases, besides one case in

which I performed the operation successfully for the second time on the same patient. Of the thirty-six women, thirty-one recovered and five died. And it is a remarkable fact that in *every case* in which the pedicle was long enough to enable me to use the clamp the patient recovered. There were thirty of these cases—thirty clamp cases in one year without a single death. In two cases I used the cautery. One of the patients recovered, and one died. In four cases I tied the pedicle, and returned it into the cavity of the abdomen after cutting off the ends of the ligature. All these four patients died. Two of them must have died, I think, in whatever manner the pedicle had been treated. They were almost hopeless cases, and the operation was done as a forlorn hope. In one case the patient was sinking fast from septicæmia, a cyst filled with fœtid fluid and poisonous gas having been washed out repeatedly, but ineffectually, with carbolic acid, and it was at last removed with only the very faintest hope of saving life. In the other case, extensive pelvic adhesions and disease of both ovaries had been pretty accurately made out, and had led to repeated tappings rather than ovariotomy. But at length, when tappings became of no avail, the cysts were removed, with some slight hope but with far greater apprehension. A clamp could not be used in either case. The pedicles were too short. The cautery might have been used; but the pedicles were of the kind where the cautery is often ineffectual in stopping bleeding—broad, thin, membranous attachments, with large vessels. In such cases the ligature succeeds well in stopping bleeding; but whether the ends are left hanging out through the opening in the abdominal wall, or are cut off short and returned with the pedicle, the results in my hands have been almost equally unsatisfactory. Other operators have been much more satisfied with the ligature than I have been, and every one must be guided very much by his own experience. But when I look back over the work of the past year in this Hospital, where all the patients have been treated in all other circumstances under similar conditions, and find no single death in thirty clamp cases. but every one a recovery, while of six cases treated otherwise five die, you will hardly wonder that I use the clamp whenever I can, especially as very similar results have been obtained in private practice. It is true, as I have just said, that two of these five deaths would probably have happened even if I had been able to use a clamp. But three of the deaths I attribute principally, or entirely, to the fact that, as I was unable to secure the pedicle outside the peritoneal cavity, I was driven against my will to the cautery or the ligature. Twice I used the cautery. In one it stopped all bleeding, and the patient recovered. In another it only stopped the smaller vessels, the larger having to be tied, and this patient

died; so that her death might be added to that of the four who died after the return of the tied pedicle. Or if, as I think it is fair to do, we put aside (so far as the treatment of the pedicle is concerned) the two cases which probably must have died however the pedicle had been treated, we have three cases where death followed the use of the ligature; and, so far as I can judge from observation of similar cases, these three patients would probably have recovered if the pedicles had been long enough for a clamp to have been applied and fixed outside the peritoneal cavity.—*Med. Times and Gazette, Nov.* 28, 1868, *p.* 605.

95.—ON SOME POINTS CONNECTED WITH THE TREATMENT OF THE PEDUNCLE IN OVARIOTOMY.

By Thomas Bryant, Esq., Surgeon to Guy's Hospital.

[The following case was reported for Mr. Bryant, by Mr. J. W. Morrison. The patient was a single woman, aged 36, she first perceived an enlargement in the belly sixteen months before her admission into Guy's Hospital. This enlargement was apparently on the right side. She was tapped on September 21st, to make the diagnosis sure, for it was uncertain how much of the fluid was ascitic.]

Nearly four gallons of a very light coloured fluid, slightly sticky, containing cholesterine, were drawn off, a large solid ovarian mass remaining. No bad symptom followed this operation, but by the 3rd of October the abdomen was nearly as large as ever.

On October 4th, therefore, ovariotomy was performed; Mr. Bryant, as usual, operated in a private ward with only such visitors present as were free from all dissecting-room, post-mortem, or other septic influences. He made an incision about six inches long below the umbilicus, tapped the abdomen, and evacuated some quarts of ascitic fluid; a semi-solid ovarian cyst then came into view, which was also tapped, and two quarts of a white, highly gelatinous fluid were drawn off. The tumour, which proved to be connected with the left ovary, was then drawn out, and its peduncle secured in two portions with strong whipcord ligatures. The tumour was then separated from its peduncle about half an inch above the ligatures; these were cut off close, and the whole was dropped back into the abdominal cavity. The wound was closed with smooth silk sutures, an opium suppository was given, and the patient was placed in bed, water dressings being applied to the wound.

A little chloroform sickness followed the operation, but disappeared on the second day, and everything went on favourably.

The patient was allowed iced milk, of which she took freely.

On October 8th, or fourth day, the wound had healed. The sutures were consequently removed, some broad pieces of strapping being put on to keep the parts well together. There had not been any pain in the abdomen since the operation, nor any distension.

On October 11th, or seventh day, the strapping became loose, some ascitic fluid having made its way through an opening in the wound; it came with a rush during the night. This somewhat alarmed the patient, but on examination a very little gaping of the wound was found, and in all other respects, the patient was comfortable. The bowels had been acting naturally during this period.

October 12th. Last night some diarrhœa set in, several loose stools having been passed; it was checked, however, by a dose of chalk mixture. The patient subsequently seemed very comfortable; she was free from all pain and abdominal tenderness. Her pulse was good, tongue clean, aspect healthy; she took her food also with tolerable appetite.

October 15th. Diarrhœa again set in, with some little abdominal tenderness at the lower part of the wound.

On October 17th a fluctuating swelling appeared at this part, this swelling being clearly tympanitic. The diarrhœa was again checked with a dose of chalk mixture, but the fluctuating swelling opened naturally on the 18th, and liquid fæces made their escape. No signs of other mischief existed. The nurse was directed to examine the fæces which passed through the artificial anus with great care, to see if any ligatures came away.

In four days, or by October 22nd, this aperture closed. Everything appeared to be going on well for one week, when diarrhœa again set in and the artificial anus again opened; fæces passed through the wound freely, and on October 29th the double loop of ligature by which the peduncle had been secured came away. In another three days the wound had again healed, and in three weeks the patient left the hospital perfectly well.

Remarks.—The main point of interest in the case just recorded is the discharge of the ligatures by which the peduncle had been secured through the artificial anus at the lower part of the wound; such a result is in my experience quite unique. Indeed, amongst twenty-four cases in which I have adopted the practice of dropping into the abdominal cavity the loops of the divided ligatures with the peduncle, this is the only one in which any untoward result has to be recorded which was clearly due to the practice itself. But in this instance there is hardly room for doubt that the ligatures by their irritation caused the diarrhœa,

and that it was through an ulcerative process that they formed a communication with the intestine, and were discharged externally.

Such a case as the above clearly tells against the practice adopted, and although by itself it may not be sufficient to prove the practice unsafe or inexpedient, it is enough to lead us to think that where a ligature can be left outside the abdomen without inconvenience, such a method had better be followed, and that although in certain cases the plan of dropping into the peritoneal cavity the end of the divided peduncle with the ligatures cut off close may be a good one, it is not free from its own special risks, and that we are still to look for some simpler or better plan by which the peduncle may be treated.

What that plan may be it is at present impossible to decide, but any method that leaves a foreign body within the abdomen is far from perfect. In one case which has been under my care within the last year, some half dozen ligatures had to be employed and were left in, and although for a time everything seemed to be going on well, a fatal result ultimately ensued, when the ligatures were found in the abdominal cavity resting in their own depôts of pus, having been thrown off from their attachments, and acting as foreign bodies. In two other cases which terminated favourably the silk ligatures by which omental adhesions had been secured were also discharged externally through the wound.

On the other hand I could quote two cases which went on without one bad symptom, in which four and six ligatures respectively had been employed without the slightest evil, the patients leaving the hospital well after an uncomplicated and steady convalescence; and many others could also be given in which the peduncle alone had to be secured and in which good results ensued.

I am free, however, to confess that the cases above mentioned have made me somewhat dissatisfied with the plan of treatment to which the peduncle had been subjected, although for short peduncles and broad attachments I at present know of no other which can be preferred; to the long and narrow peduncle the clamp may be as applicable, to say the least of it, and perhaps more so; still in other cases this plan of treatment by the clamp is far from satisfactory. Where the peduncle is short or broad it is certainly objectionable; for by the clamp fixed externally there is invariably traction upon the uterus and its ligaments, and this traction is the source of great irritation and consequently of danger.

I had hoped that in the actual cautery we should have found the right means of treating the peduncle as well as omental and other adhesions. In fact some evidence has been given favourable

to the use of the actual cautery in these cases; but I regret to say that in my hands it has certainly failed. In the case of a girl aged 22, whom I operated upon on Nov. 20th, 1868, I burnt down the peduncle with the galvanic cautery with the greatest facility, and also one large omental adhesion, but hemorrhage took place in the latter from a large vessel, the size of the ulnar artery, as well as from another point. I consequently ligatured the whole.

I must admit also that from the appearance of the carbonised surface I should not have returned it into the abdominal cavity without some misgiving, and I cannot help thinking that it must be as much a foreign body as a thin whipcord ligature. Still, from one case it is hardly fair to draw any conclusions, for if the peduncle had been the only part which required division, I should certainly have dropped it back tolerably satisfied with the effect of the cautery, and good success might have followed. It was perhaps unfortunate that in the omentum so large an artery as I have described should have existed, for it is unusual.

There is another lesson to be learnt from this case which must not be omitted, and it refers to the application of the ligature to the peduncle. That the peduncle should be tied in halves is a point which is generally recognised and needs no comment; but that the ligatures should be crossed is perhaps not sufficiently followed in practice. By doing so the chance of tearing the two halves of the peduncle asunder, and the danger of lacerating important parts are done away with. Again, should the ligatures set up ulceration in the part, they will both come away together, as in the case I have related.

It is well also to perforate the peduncle with a blunt-pointed probe, for a sharp needle may puncture a vein or other vessel, and thus cause a troublesome hemorrhage; in a case I had some years since such a result took place, and taught me the lesson I now repeat for the benefit of others. In ovariotomy success seems to turn much upon what appear to be small points, but as a life is often involved in their consideration, too much attention cannot be given to any that are of value. The one I have mentioned must consequently be regarded as an important one.—*Guy's Hospital Reports, Vol.* 14, 1869, *p.* 228.

96.—ON THE OPERATION OF CÆSARIAN SECTION.

By Dr. Robert Barnes.

The *instruments* required are :—1. A sharp bistoury. 2. A bistoury having a blunt end. 3. A director such as is used in ovariotomy. 4. A large probang armed with sponge. 5. Artery-

forceps and ligatures in case of bleeding from the abdominal wound. 6. New sponges. 7. Ice. 8. Two powerful apparatuses for inducing local anæsthesia by congelation, or chloroform. 9. Silver or silk-sutures for uterine and abdominal wounds. 10. Lint. 11. Many-tailed bandage and adhesive plaster.

Assistants.—Skilled assistants should stand one on each side of the patient. Another should be free to hand instruments and assist in sponging, &c. A nurse or two to help will complete the *necessary staff*.

Preparation.—The bowels should be emptied by castor-oil or by enema on the morning of the operation.

THE OPERATION.—*Position.*—The patient is laid on a table on her back, with the head and shoulders slightly raised. The operator stands on the patient's right; an assistant stands on each side.

The *catheter* is introduced to empty the bladder. If the case be one of osteomalacia, explore for the last time carefully to ascertain if the pelvis can be opened up by dilatation by the hand. In this way, twice at least, the operation has been avoided. It is related that a young surgeon, burning with the ambition to perform the Cæsarian section, invited his *confrères* to assist. Everything was ready, when Osiander requested permission to examine. He opened up the pelvis, turned, and extracted a live child; and thus, says he, "I saved the woman from the Cæsarian section and from death." Dr. Tyler Smith has also related a case in which he was able to dilate the pelvis with his hand, and deliver after craniotomy.

In cases of great distortion, the uterus is not seldom found considerably displaced. Where there is great prominence of the sacral promontory, and squatting of the chest down upon the flanks, the uterus is necessarily thrown much forward, sometimes so as to overhang the symphysis. With this there is occasionally marked lateral obliquity; and, what is less common, but still likely, a twisting of the uterus on its long axis, bringing one of its sides to look more or less forward. This was noticed in Dr. Hicks' case.

It is also desirable to take note, by auscultation, of the seat of attachment of the placenta. Assistance may also be obtained by laying the hand flat on the uterus, when, if the walls are thin, a peculiar thrill or vibration marks the seat of the placenta, which is confirmed by feeling the part bulging a little, as if a segment of a smaller globe were seated on a large spheroid. This has been pointed out by Dr. Pfeiffer (*Monatsschr. f. Geburtsk.* 1868.)

The uterus is then brought into proper relation with the linea alba, so that the two incisions may correspond, unless it be found that the placenta can be avoided by cutting a little on one side of the median line. The abdominal incision is best made in the *linea alba*, extending from below the umbilicus to within about three inches of the symphysis pubis. When nearly through, it is desirable to get a finger through a small opening, and, using this as a director, to cut from within outwards, so as to avoid scratching the uterus. The assistants support the abdominal wall on either side, looking out to prevent the escape of intestine. The *uterine incision* is made in the middle line, sparing the fundus and lower segment as much as possible, as these parts are not well adapted to close by contraction. Circular fibres predominating near the cervix tend to make the wound gape. A manœuvre described by Winckel, and forced upon him by his being often called upon to operate with insufficient assistance, here deserves attention. An assistant hooks the forefinger of each hand in the upper and lower angle of the uterine wound, and, lifting them up, fixes them in contact with the corresponding angles of the abdominal wound. This shuts out the intestine effectually and tends to prevent the blood from running into the abdominal cavity.

If the placenta is found directly behind the wound, the hand of the operator is insinuated between the placenta and the uterine wall, detaching it until the edge is felt, when the membranes are pierced, and *the child is seized by the feet.* This point obstetricians will pardon me for prominently emphasising, because I have seen a surgeon pull at the arm and fail to extract the child. Sometimes the neck is tightly grasped by the uterine wound. If the constriction does not soon yield, it is better, says Scanzoni, to extend the incision than to drag overmuch, lest the wound be torn.

When the child and placenta are removed, attention is required to watch the bleeding; this generally takes place from the cut sinuses in the uterine walls, less frequently from the inner surface from which the placenta has been separated. Hemorrhage is best checked by direct compression of the uterus with the hand; if the uterus contract well, the hemorrhage ceases. Ice may be applied to the wound, and a piece placed in the uterine cavity.

Before closing the wound, *thrust the probang through the os uteri and vagina*, to make sure that the natural passages are clear for the discharges from the uterus.

The Closure of the Wound.—When the bleeding has ceased, and any blood that may have found its way into the abdomen is removed, we have to consider the question of applying sutures to the uterine wound. It is a matter of observation that in

many fatal cases the edges of this wound have been found flaccid and gaping. But in the majority of, if not in all, these cases the operation had been performed on women exhausted by protracted labour; and, on the other hand, in women operated upon at a selected time, when the powers are unimpaired, the uterus commonly contracts well. Winckel says he has never lost a case from hemorrhage, and has not stitched the uterine wound. Mr. Spencer Wells has had a successful case in which he used a long piece of silk as an uninterrupted suture, leaving one end hanging out through the cervix and vagina. By pulling on this end the suture was removed after several days.

Another mode of suture would be to carry the same suture though the uterine and abdominal walls, so as to secure adhesion between the two parts. A serious source of danger is from vomiting: the straining and relaxation attending this accident tend to promote the opening of both wounds, and to force the discharges through them. This risk would be lessened by uterine sutures. Upon the whole the case may be stated thus:—If the patient is operated upon at a selected time, if the danger of vomiting is lessened by not taking chloroform, and if the uterus contracts well during the operation, the sutures may be dispensed with; but under the opposite circumstances, it would be better to stitch the uterus as was done in Mr. Spencer Wells's case.

Closure of the Abdominal Wound.—The methods adopted in ovariotomy may be followed. I am inclined to prefer the uninterrupted silk suture. Winckel's cases were closed by the more common method of interrupted sutures, with intermediate skin sutures. The important point is to *close the wound completely.*

After-treatment.—A full dose of opium should be given immediately either in form of pill or suppository. Light nourishment and perfect repose are the things to be observed. The dressings should not be removed for five or six days. To obviate foulness, sprinkling with Condy's fluid or weak carbolic acid may be resorted to. The sutures may be removed on the seventh or eighth day. The bowels may be relieved by enema on the fourth or fifth day.

What is the risk to life attending the Cæsarian section, numerically expressed? I have already made some remarks upon this, the statistical aspect of the question. I doubt if any satisfactory answer can be given. Can any quasi-analogical deduction be drawn from the mortality attending ovariotomy? Take this to be one death to two or three recoveries; may we expect a similar result from the Cæsarian section—I mean, of course, when performed at a selected time? It would be rash to expect an equal success; and there is a consideration which, I think,

is generally neglected by obstetricians. It is this: we are not justified in treating the particular patient whose case is before us as an abstract entity, a mere arithmetical unit. Her fate is not to be decided by what are called statistical laws, but which are in reality too often nothing better than the accidental issues of blind gropings. We must study case by case; compare them: analyse clinically. "Non numerandæ, sed perpendendæ sunt observationes."

The Dangers of the Operation and Prognosis.—The principal risks run are as follows:—

1. If the operation is performed as the last resource after protracted attempts to deliver by other means, the woman is liable to sink from shock and exhaustion within a few hours; or if she survive beyond a few hours, there is the risk of hemorrhage, of peritonitis, and of puerperal fever. It may be said that the prospect of recovery, when the operation is performed under these circumstances, is very small.

2. If the operation is performed at a selected time, the woman escapes the shock attendant upon the protracted labour, and encounters the shock of the operation with unimpaired strength. Still, the shock is very great, and is not seldom fatal *per se*. This is the first and most pressing danger. Could it be in any way modified or controlled, the Cæsarian section might be undertaken with more confidence. But shock necessarily attends all severe abdominal injury. It affects different persons in different degrees. Nor can we readily predicate of any given person that she will bear shock well or badly. It is an uncertain element, and must probably ever perplex all calculation as to the result of the Cæsarian section in any particular case. I do not think that chloroform materially lessens the shock; and it adds the danger of vomiting.

3. The next danger is *hemorrhage*, and as hemorrhage is often associated with prostration as cause and as effect, the danger is serious. This may come on within a few hours. It might be expected that hemorrhage would be liable to come from the inner uterine surface, as after ordinary labour, but the more common source is probably from the sinuses divided in the uterine wound. The quantity lost may be enough to cause a fatal anæmia. But the more common evil is from the irritation caused by the blood collecting in the abdominal cavity giving rise to

4 *Secondary shock* and *peritonitis*.—That secondary shock precedes peritonitis I have no doubt. Intense pain, even tenderness on pressure, rapid small pulse, accelerated and impeded breathing, suggest the diagnosis of peritonitis; but if at this stage the patient die and is examined, probably no trace of peritonitis, as revealed by redness or effusion, is discovered.

Peritonitis may come on the day following the operation. It may be met by fomentations to the abdomen, by opiate suppositories; and the prostration soon ensuing must be combated with wine, brandy, beef-tea, chicken-broth. Salines are often useful, especially at first.

5. If the patient escapes the preceding dangers, there is still the risk of septic infection, of *septicæmic puerperal fever*. The source of this is the absorption of septic matter from the cavity of the womb or from the edges of the wound; or it may arise from general blood-dyscrasia resulting from the accumulation in the circulation of effete matters which the excreting organs are unable to dispose of.

6. In addition to the dangers incident to the operation and to the puerperal state, there is the danger inherent to the disease which rendered the operation necessary, liable in some cases, as in cancer, to be aggravated by the operation, which may accelerate the fatal issue.—*Med. Times and Gazette, Dec.* 26, 1868, *p.* 717.

97.—ON VESICO-VAGINAL FISTULA.

By Dr. Maurice H. Collis, Surgeon to the Meath Hospital and County Dublin Infirmary; Examiner in Surgery to the Royal College of Surgeons in Ireland; Chairman Irish Medical Association.

The first branch of plastic surgery to which I wish to draw attention, is that which deals with fistulæ connected with the vagina and the bladder or rectum. These have been treated by cautery, by suture, and by transplantation of flaps. To the various methods I have contributed one, which has proved not unsuccessful in my hands, and in those of others who have taken pains to master its details. I got the idea from Pancoast, an American surgeon, and author of a work on Operative Surgery. He describes a plan by which he treated a vesico-vaginal fistula successfully. It is briefly as follows. He pares one side of the fistula so as to make it wedge-shaped, stripping it of its mucous membrane, both on vesical and vaginal surfaces. The

Fig. 1.

opposite side or margin of the fistula is split so as to form two flaps, one vesical and the other vaginal; the raw surfaces, when undisturbed, lying in contact. Between these two flaps, the

raw wedge-shaped margin on the opposite side of the fistula is pushed and held by sutures. This sort of dovetailing of the flaps seemed to me an ingenious and happy method of increasing the amount of raw surface, and so, of increasing the chances of union.

I had not been long acquainted with this method, when I chanced to meet a case of vesico-vaginal fistula which seemed to me capable of cure. It was the first I had seen; for at this date (1856) they were looked upon in Dublin as incurable. At least, the success was so slight, that men had given up trying any plastic operation for their cure. If a touch of the cautery would close them, well and good; but if the size were too great for that, they were dismissed as incurable.

The method I adopted in my first case has since become known in foreign parts as Collis's method. It is, however, simply a modification and improvement on Pancoast's. I split the margins of the fistula all round to an extent of at least half an inch. This incision of the margins must always pass well through any tough cicatricial tissue, and reach sound areolar tissue. If this point be

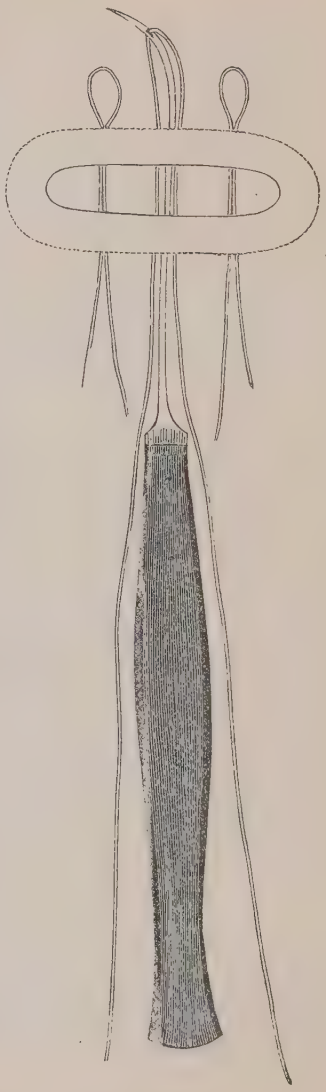


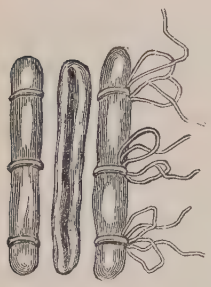
FIG. 2.—Inner dark line shows margin of fistula. Dotted line shows extent of dissection.

not attended to with great care, the operation will fail. Having split the margins, I now insert a sufficient number of quilled sutures (Fig. 2), and, on tying the loose ends with a moderate degree of tightness, the flaps open up, and a very large amount of raw surface is made available for union.

Fig. 3 shows the position of the quills and margin on the stitched or vaginal aspect.

Fig. 4 is a sectional view, showing not only the position of the parts depicted in the previous figure (3), but also the mode in which the vesical flaps adapt themselves to one another; also, the position of the quills and sutures.

FIG. 3.



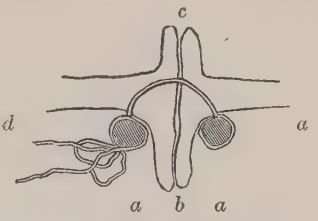


FIG. 4.—*a*. Section of quills and position of suture, when tied. *b*. Vaginal flaps. *c*, Vesical flaps. *d*, Vesico-vaginal septum.

This mode of treatment has succeeded well in my hands, and in those of Dr. Kidd and other friends. The result in my own practice is thirteen cases and nine cures.

The advantages of this method are—1. There is no loss of tissue, as in paring operations. 2. There is a very large amount of raw surface compared to any paring operation. 3. The flaps towards the bladder will often unite, while the vaginal flaps may fail to unite, either from suppuration or ulceration. Even when the vaginal flaps have been allowed to slough off from undue tightening of the sutures, union of the vesical portion has taken place. 4. These flaps act also as valves to prevent the access of urine in the wound.

I would only add, that the length of time I leave the sutures uncut depends on the extent and the toughness of the flap. It will vary from the third to the sixth day. I keep the bowels quiet with moderate doses of opium. I keep a catheter in the bladder for forty-eight hours; and I generally place a piece of soft sponge in the vagina to support the sutures, just enough to assist in making a moderate pressure on the bladder, and keep

it from much movement. I may add, that I have often resorted wth success to this method when other methods had failed.—*British Medical Journal, Nov.* 14, 1868, 518.

98.—ON THE DIFFERENT MODES OF PREPARING THE SPONGE TENT, WITH DIRECTIONS FOR MAKING IT ANTISEPTIC, &c.

By Dr. George Syng Bryant, (late of St. Louis), Lexington, Ky.

[The use of sponge tents in uterine disease is so necessary and frequent, that any suggestions as to their improvement are of value.]

The great objection to the sponge tent has been its retention of the secretions, allowing them to decompose in the uterus, and in some instances producing pyæmia. This absorbing quality of the sponge made it desirable to find a substitute for it as a uterine tent. The sea-tangle—"laminaria digitata"—was proposed by Dr. Sloan, of Scotland, for this purpose, and greatly improved by Dr. Greenhalgh. But this article is far inferior to the sponge except in the single quality of cleanliness. Some surgeons prefer the sea-tangle when the os is very small, not admitting even the most diminutive sponge tent. The usual plan of treating these very narrow constrictions has been with metallic stilettes, or wooden stems, until the os or canal was sufficiently large to admit a small sized sponge tent. But this slow process of dilatation I have long since abandoned, and am in the habit of resorting at once to the knife, opening up the os and cervix sufficiently to receive a small, carbolized sponge tent; after which there is no further trouble in effecting dilatation to almost any desirable degree.

For opening the os and cervix I have added another blade, with a probe point, to Dr. Sims' blunt-pointed ball-and-socket knife. With this blade the nicking operation is perfectly safe; for the probe point can only find its way along the canal, and the cutting edge can do no more than follow the probe point, simply nicking the mucous membrane to the extent of the width of the blade, which should not exceed one-eighth of an inch.

If the objection to the sponge as a nidus for putrid secretions can be obviated it is evidently the best material yet known for dilating the os and cervix uteri. In the American Journal of the Medical Sciences of July, 1867, will be found a formula for making the sponge tent antiseptic, by Dr. J. C. Nott, now of New York. He prepares the sponge in the usual way, then saturates it with an antiseptic paste, composed of alum, acetate of lead, wheat flour, and gum-water, heated to the boiling point,

and wraps it with gold-beater's skin. It is then punctured freely with the point of a small knife blade.

Mr. Robert Ellis describes (see Amer. Journ. Med. Science, January, 1868, p. 276) a method of carbolizing the sponge tent by passing threads saturated with carbolic acid through the centre of the sponge longitudinally, which is then rolled into shape and covered with cocoa butter, to which is added a little glacial carbolic acid.

For more than eighteen months past I have been in the habit of using ten or twelve grains of crystallized carbolic acid to one ounce of thick gum mucilage, prepared for saturating the sponge tent before being wrapped with cord. This mode of mine for making the sponge tent antiseptic is well known in St. Louis, and to many of the profession in Louisville and elsewhere. The carbolic acid not only renders the sponge antiseptic, but its styptic qualities add much to the efficiency of the sponge in many diseased conditions of the mucous membrane. In preparing the tent moderately coarse, elastic sponge should be selected. Cleanse it well, cut while wet into the exact shape and size preferred; saturate it with gum mucilage, prepared as before described, and wrap it on an awl, with a strong, coarse, well-twisted cord. The tent should be fusiform in shape, and wrapped from the small end, as directed by Dr. Sims, taking care to keep the layers of the cord as they are carried around the sponge with perfect regularity, in close proximity to each other. By leaving the screw threads—not cutting them down with sand paper—the tent can be much more easily introduced; giving it a turn, as to an ordinary screw, in the act of inserting it. When made in this way the tent does not slip out, as a smooth one is apt to do; and it should not project more than one-eighth or one-fourth of an inch out of the os. The best instrument I have found for introducing the tent is a pair of small, straight forceps, with an attachment to the handles to make fast the blades. The tent, firmly fixed in the forceps, is inserted as above directed, the uterus being held by a volsella or hook. The tent should always be slightly soaped, more particularly at the small extremity, to enable it to pass in with less friction.—*American Journal of Medical Science, Oct.* 1868, *p.* 410.

99.—ON THE THERAPEUTICAL USE OF MEDICATED PESSARIES.

By Dr. Alfred Meadows, Physician to the Hospital for Women, and to the General Lying-in Hospital.

[The medicated pessary in common use has for its basis the cocoa butter, and ordinarily weighs about a drachm and a half. The

uncertainty of their action, however, has led Dr. Meadows to question the propriety of using any greasy substance as a vehicle for a drug, as such substances tend to shield the drug from the absorptive action of the vaginal wall.]

I have made some pessaries in which the basis is the neutral soft soap of the British Pharmacopœia, made into a proper consistence with white wax, or powdered althæa root. I have also reduced the size one-half, or even less, as the others appear to me to be needlessly large: those made with the althæa are very nice when properly prepared; they are agreeable in use, and have a pleasant emollient action, which is very grateful where an anodyne effect is also required. There is, however, one slight objection to this base, viz., that it is apt to become very hard if kept long and exposed to the air. This is avoided if only half-a-dozen are made at a time for present use. The proportion which is found to answer best is three parts of soft soap to one part of powdered althæa. Where the emollient action is a matter of indifference, the white wax may be used in place of the althæa, in the proportion of three parts of soft soap to one part of white wax. This mass melts gradually, and forms, with the vaginal mucus, a kind of emulsion holding the drug in solution, which is readily absorbed.

With these ingredients I have had much better, more certain, and uniform effects than with those made of cocoa butter; I have, therefore, found it necessary to use smaller doses, if I may so call them, of drugs; for instance, with one grain of extract of belladonna I have had more marked effects than with two and even three before. There is, however, one drawback to be noted. In two cases which have come under my notice, the soap appeared to cause some little irritation to the vagina; in one of these the patient was obliged to get up in the night and use cold water freely to allay it. I can only explain this as an idiosyncrasy, just as there are some skins which can never bear soap of any kind. In the case in question, however, I found that the althæa with belladonna was borne very well.

There is one other form of pessary quite recently introduced by Dr. Sansom. It consists of a hollow cone of white wax, containing a watery solution of the ingredient used; the apex of the cone is filled over with cocoa butter, and as this melts much sooner than the wax the liquid flows out, and is then absorbed. I have not yet been able to test these efficiently, but the idea is ingeniously carried out by a chemist at Islington, and may, I conceive, prove successful; the preference which, as yet, I feel disposed to give to those I have employed arises partly from my fear lest the watery solution in these latter forms might

escape too quickly for complete absorption, and so the dose become untrustworthy.

A few words now as to the remedies which may be used with most benefit. As anodynes I do not think there is anything comparable with the extract of belladonna in about 1 gr. doses, or its akaloid, atropine, in $\frac{1}{18}$ gr. I have long been in the habit of using this, and can endorse all that Dr. Anstie has urged in its favour as a special anodyne to the female pelvic organs. Conium I have also used, and, though it is strongly recommended by French authorities, I have not found any great benefit from it. Henbane is better (5 to 8 grs. of the extract), and morphia ($\frac{1}{3}$ to $\frac{1}{2}$ gr. of the acetate) is exceedingly valuable. By any of these, used in the way I have suggested, we may easily, if we wish, affect the whole system.—*Practitioner, Jan.* 1869, *p.* 12.

100.—ON A NEW DUCK-BILL SPECULUM FOR PRIVATE PRACTICE.

By Dr. J. C. Nott, New York.

[This speculum is peculiarly suitable to the requirements of the private practitioner.]

No one who has worked much in uterine surgery, and tested fairly the lever speculum of Sims, and the various forms of valvular and cylindrical specula, can deny that the former possesses important advantages over all others. I believe I may safely say that there is scarcely anything that can be done with others, that cannot be equally well done with the instrument of Sims, while the latter has many applications peculiar to itself.

The leading advantages of Sims' speculum are briefly these: It enables us to explore the vagina more satisfactorily than any other, as it covers but a small portion of the canal, and its position is quickly changed. Where the vagina itself is diseased, or sensitive, it is greatly preferable, as it presses on but one side, and leaves the atmospheric pressure to complete the dilatation. During operations the position and direction of the instrument can be changed by the assistant, at a moment's warning, to suit the wishes of the operator. It obstructs less the view and manipulations than any other speculum heretofore used. Not putting the vagina on the stretch *longitudinally*, it allows the uterus, by slight traction with a tenaculum, to be brought near the vulva, and thereby greatly facilitates cauterizing, probing, and all cutting operations on the cervix, introduction of tents, &c. Nothing need be said about its triumph in vesico-vaginal fistula.

It would be a waste of time to enumerate the objections, now so generally admitted, which may be made against the cylindrical and common valvular specula; suffice it to say that their utility is limited to but few conditions—that they act on principles the reverse of the instrument of Sims—they dilate the vagina simply by mechanical force—they cover the whole vagina from view—they *push the uterus away* from the operator, and are of little service beyond affording an excellent view of the os and lips of the uterus, and of allowing the easy application of caustics or other remedies to these parts. Where flexions or versions of the uterus exist, they do not even admit the introduction of a sound without unjustifiable violence, and from the length and narrowness of the channel through which we hope to manipulate, they are utterly useless in all cutting operations. The ingenious instruments of Drs. Emmet, T. Gaillard Thomas, and Bozeman. have been fully described by their respective inventors, and any fair comments upon their respective and acknowledged merits would far transcend the limits here allowed me. I would remark, in passing, that I do not think either one well suited to the wants of the *private practitioner*. To get at the cervix uteri they all require either the semi-prone position or that on the knees; they consequently require an elevated table, and a light horizontal with the table, to give a good view, all of which conditions are inconvenient in private houses. Dr. Thomas' modification of Sims' speculum requires to be held by one hand, and therefore leaves but one free. Dr. Emmet (whose operations are all performed in hospitals, private or public) frankly said to me that Sims' speculum is superior to all others, and that he rarely uses any other. His object in contriving a new instrument was not for his own convenience, but for that of others; and the profession is certainly greatly indebted to him for his success. The operation of vesico-vaginal fistula, and most other vaginal operations, can be well performed with his instrument. The instrument of Dr. Bozeman is peculiarly adapted to the operation of fistula as I understand it, and the modifications of Sims' speculum, and that of Cusco by Dr. Thomas, though excellent instruments for most purposes, are wholly inapplicable to the operation of fistula. But there are insuperable objections to the speculum of Sims in *private practice*. It requires, for the simplest manipulations, a table from two and a half to three feet high, and a horizontal light; it requires a trained assistant to manage it; and the patient must be placed in the semi-prone position, with the head lower than the hips, which is very constrained and fatiguing if long continued.

We might just as well attempt to popularize the fracture beds of Jenks or Daniels, as the speculum of Sims; and from its bulk, costliness, and liability to be broken in carrying it about,

the instrument of Dr. Emmet, with all its merit, is not, I fear, destined to come into general use.

I may remark, by way of parenthesis, that the operation of vesico-vaginal fistula has long since ceased to be one of the wonders of the world. The rules for its execution are so well defined, and the operation now so simple that any one of ordinary dexterity can perform it. In this operation assistants are indispensable, and I do not see that it really requires any more perfect instrument than that of Sims, unless in a few exceptional cases—perhaps in some very fat women. Dr. Emmet, with Sims' speculum, and a few simple instruments, performs it two or three times a week; and I have repeatedly seen him do it, as also his operation for procidentia, with the utmost dexterity and dispatch.

Like lithotomy and ovariotomy, these operations are comparatively few, and rarely fall into the hands of any but specialists. *What most practitioners want is a speculum for every-day use*—one which will enable us to explore readily the vagina and uterus—to introduce a sound—to introduce tents—to split or amputate the cervix with scissors, &c., all of which I have been doing for months past with my speculum, and with quite as much and more ease than I could with that of Sims.

In very large fat women, from the disposition of the vagina and bladder to crowd in, in front of the os uteri, my instrument (as that of Sims and all others that I have seen used) meets with difficulty; but these exceptional cases are few and far between. Dr. Bozeman claims to have overcome this difficulty in the operation for fistula, and his experience gives full weight to his assertion.

The following are the advantages I claim for the instrument I introduce to the profession:—

1. No instrument hitherto devised can be more easy to introduce.

2. It can be equally well used in the semi-prone position or on the back.

3. While elevating or depressing the perineum, its feet are so constructed as to expand the *ostium vaginæ* to any desired extent.

4. It is perfectly self-retaining, without any arrangement external to the vagina.

5. In the semi-prone position it has the same advantage of atmospheric pressure as the lever speculum of Sims, and when the patient is on the back, by elevating the hips with a cushion or pillow, you have the same advantage of atmospheric pressure.

6. I use the instrument almost entirely with the patient on the back, because the position is more comfortable; because I can do everything I wish to do with more facility; and because

the light from any window is more easily commanded. The concave surface of the speculum looking upwards, catches and throws the light fully on the anterior wall of the vagina and os uteri.

7. For all ordinary manipulations, where no cutting is required, instead of a table, any common bedstead or couch will command the light sufficiently from almost any window to give a good view. Baker Brown, in his operations for vesico-vaginal fistula, while using Sims' speculum, places the patient in the lithotomy position.

8. Like Sims' speculum, mine does not stretch the vagina *longitudinally*, and therefore allows the os uteri to be drawn down with a tenaculum near to the vulva.

9. The anterior wall of the vagina being left free, more space is afforded for operations.

10. With this speculum there are few operations that cannot be easily performed without an assistant.

I have also added, in some of the instruments, a small tenaculum, two inches long, with a little chain, any link of which may be made to catch on to a knob at the heel of the instrument. With a pair of forceps the tenaculum is fastened into the anterior lip of the uterus, and then drawn out and fixed at any point we desire.

I should remark that I have not yet tried this instrument in a case of vesico-vaginal fistula, and do not think it would answer well in any but small openings. By shortening the feet of the instrument, however, they would be out of the way, and the instrument would still be self-retaining. The feet need only be long enough to curve around the rami of the pubes, and thus not press upon or stretch the bladder; with this alteration I see no reason why it should not answer well for vesico-vaginal fistula.

Directions for using the Speculum.—The depressor being retracted and the instrument closed, the palm of the hand is placed over the outer opening of the instrument; the end of the thumb is placed on the back of the duck-bill, and the index and middle fingers curved over the heels of the feet—the blades are all thus firmly compressed together. Pass the instrument into the vagina *as far as it will go*, the end of the duck-bill gliding along the posterior wall of the vagina, and the curved feet well within the arch of the pubes. Then turn the button on the screw until the perineum is pushed sufficiently out of the way, and the ostium vaginæ is well opened. In women who have had children, the instrument may be slowly expanded nearly or quite to its full limits. Then, if the os uteri is not in view, push the end of depressor forward, and sweep it around to the central line to hold up the wall of vagina, and bring the os uteri

in view. This is the only difficult point to the novice, but is easily overcome by a little practice. In some cases, as with Sims' speculum, a small tenaculum hooked in the os uteri, will facilitate the view by bringing the uterus lower and changing its axis.

In fat women the same difficulty exists with this as with all other specula, in probing and in all cutting operations. I have not used this instrument with the patient on the knees, but the principle and action here would be the same as the lever of Sims; the action of the air would be the same.

Caution.—Nitrate of silver and other chemicals act on plated instruments, and when I apply them to the os uteri, I always stuff a little cotton between the uterus and instrument to protect it.

The following wood-cuts represent the instrument with the feet upwards, the attitude in which I most frequently use it.

Fig. 1. The instrument as expanded, after being introduced.

Fig. 2. The instrument closed, preparatory to introduction.

If the reader will turn the drawings upside down, he will probably form a better idea of the shape and construction of the instrument. The two feet *b*, *b* are intended to stand firmly on rami of the pubes, while by turning the button on the screw, the duck-bill or lever recedes and carries with it the perineum.

Fig. 1 represents the instrument with the feet upwards, as it is used when the patient lies on her back,

a, the duck-bill, corresponds with the Sims' lever, and acts on the perineum in the same way.

b, *b* are the two feet, which rest on the rami of the pubes, and are so shaped as to curve smoothly around the bones, and not to press on their sharp edges.

c, is the depressor (or elevator, according to the position of the patient), which may be pushed forwards or drawn backwards, and swings around from side to side, like an oar on a pivot, so as to press out of the way the anterior wall of the vagina. This is a very convenient appendage when the patient is on the back, but may be dispensed with when the instrument is used in the semi-prone position. It is easily slipped out by unscrewing the little button, *d*, on the end.

I should remark that this depressor is the only part of the instrument that is likely to give the inexperienced operator any trouble. It should not be too much curved and when pushed to its full extent, should stand in a line with the axes of the feet of the instrument. It is malleable, easily bent, and very little practice will enable the operator to shape it properly.

e, is the button which plays up and down the screw, expands or contracts all the blades simultaneously, and fixes them at any point to suit the capacity of the vagina.

f, is the screw which opens or closes the instrument.

FIG. 1.

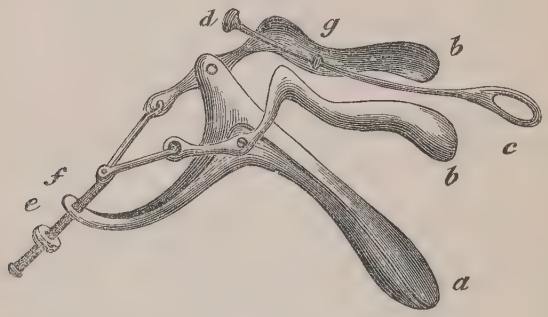
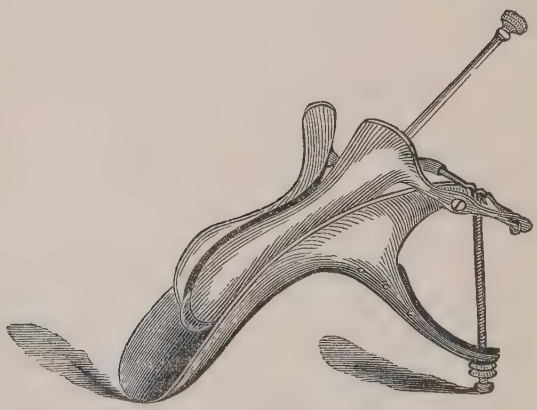


FIG. 2.



After the operator has secured a good view of the os uteri, should he wish to draw the uterus nearer to the vulva, this is easily effected by catching the anterior lip with a tenaculum, and drawing it down, whilst the depressor is retracted and taken out of the way.—*American Journal of Medical Science, Oct.* 1868, *p.* 420.

101.—ON SOME CASES OF INFLAMMATION OF THE BREAST SIMULATING CANCER.

By Thomas Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

The majority of surgeons of the present day are disposed to believe that an operation for cancer of the breast should be undertaken as soon as the nature of the disease has been clearly decided; for it seems tolerably certain that a woman has a better chance of being cured of the affection, if I may use such a term, or of being rendered free of the disease for a more lengthened period, by an early operation, than by one undertaken when the cancer has existed for many months, or has undergone degenerative changes, when, too often, secondary deposits have taken place in the absorbent glands, or it may be in other parts. The diagnosis of a cancer of the breast in its early stage is consequently a subject of great importance, and the differential diagnosis betwen it and other affections for which it has been and may be again mistaken becomes a matter of some interest. I propose, therefore, in the following brief communication, to consider the differential diagnosis of cancer of the breast and chronic inflammation of the gland, for it is between these two classes of cases that the greatest diagnostic difficulties are encountered and the gravest errors in practice fallen into; for who has not known a chronic inflammation of the breast-gland mistaken for a cancerous affection, or a chronic abscess of the breast removed for a cancerous tumour? Under these circumstances, the following cases of inflammation and suppuration of the breast appear worthy of record; for in their clinical aspect they displayed symptoms which are not uncommonly found to be connected with cancerous affections— such as a retracted nipple, adhesion, puckering, or cupping of the skin to the parts beneath, and enlarged axillary absorbent glands. They clearly point out the value and necessity of closely inquiring into the history of a case before making a diagnosis, and the wisdom of not laying too much stress on the presence or absence of any single symptom. A true scientific diagnosis, resting upon a correct appreciation of the value of symptoms—taken in the order of their appearance and in their different combinations—for a single symptom, uncombined with others, is of small value when considered by itself, although when combined it may be of primary importance; for symptoms can only be interpreted correctly by the aid of others with which they are associated.

Case 1.—*Chronic Abscess in the Breast with a Retracted Nipple.*—Ellen D., aged 39, a married woman, the mother of three children, the last *eight* years since, came under my care at Guy's Hospital, on April 1st, 1867, with a swelling in the left

breast of two months' duration, and a retracted nipple. The tumour occupied the axillary half of the mammary gland; it was hard to the hand, and doubtfully elastic; it clearly was an infiltration, of some kind, of the gland-tissue. The nipple had become drawn towards the axilla since the swelling first appeared, and the breast was the subject of a sharp pain, there was no external sign of inflammation whatever, and no increase of heat. The axillary glands were, however, uninvolved. A correct diagnosis of the case at this period of the disease was clearly difficult. The age of the woman, the fact that the breast-gland had ceased to be active for eight years, the infiltrating character of the disease, and the retraction of the nipple, were amply sufficient to render the opinion probable that the disease was cancerous; and yet all these symptoms were quite compatible with a simple affection, and, as the result proved, were due to such. For in two weeks the skin over the tumour had become involved and glued to the parts beneath. Some slight redness of the integument also appeared. In another week, an abscess was opened, and several ounces of pus escaped. On May 15th, six weeks after her coming under my care, and about four months after the first appearance of her symptoms, she was discharged cured. The nipple, however, remained somewhat retracted.

Case 2.—Chronic Inflammation of the Breast Simulating Cancer.—Eliza W., aged 34, came under my care at Guy's Hospital, on June 6th, 1867, for an affection of the right breast of nine months' duration. It had appeared after a blow. The whole gland was involved in the disease, and was much swollen, being clearly infiltrated with inflammatory and other products. The nipple was completely drawn in, and out of sight. The skin also was fixed to the parts beneath, and brawny. Manipulation of the part caused some little pain. The axillary glands were somewhat enlarged and tender. There was no perceptible increase of heat in the part. Judging from the symptoms alone, there might probably have been some little difficulty in forming an opinion in this case, for a gradual enlargement of the breast for nine months, an infiltration of the skin, retracted nipple, and enlarged axillary glands are such symptoms as are constantly found to exist in cancer of the breast. An inquiry into the history of the case, however, put an end to all doubt, for it was elicited that the woman had been confined twenty-one months previously, and had been suckling up to the time when she received the blow. The subsequent course of the case proved the disease to be simply inflammatory; for, under tonic treatment and cooling local applications, all the inflammatory thickening and infiltration gradually disappeared, and in two months she left cured.

Case 3.—Chronic Abscess in the Centre of the Breast, simulating Cancer in its Local Symptoms.—Mrs. R., aged 37, a married woman with one child three years old, came under my care at Guy's Hospital on May 13th, 1867, for a swelling in her left breast of six weeks' standing. The tumour was placed in the centre of the mammary gland; it was firm to the feel and indistinctly fluctuating; manipulation caused pain; the skin over the part was healthy and quite mobile. The nipple had retracted during the last three weeks. There were also enlarged axillary glands. The diagnosis of this case was very obscure, for such a combination of symptoms as I have just detailed are seldom present except in cancer. On April 11th, however, one month after her first visit to me, it came out that she was pregnant about three months. The tumour by this time had been much enlarged, and fluctuation had become more distinct. For diagnostic purposes, therefore a grooved needle was introduced into the centre of the growth, and pus escaped. The abscess was accordingly freely opened, and a rapid recovery took place.

Case 4.—Chronic Abscess in the Breast, simulating Cancer in its External Symptoms.—L. W., aged 39, a single woman, came under my care on November 22, 1866, for a tumour, of the size of a walnut, above the areola of the left breast. It had existed for many months, and had appeared slowly. It was the seat of a chronic pain. The nipple was completely retracted, and the skin over the tumour was puckered and adherent to the parts beneath. The axillary glands were apparently sound. The symptoms thus tabulated were such as are very commonly found in cancerous disease; and the fact of the patient being a single woman, and about forty years of age, tended to encourage such an idea of the case. An inquiry, however, into the history of the disease cleared up the doubt; for it was discovered that the retraction of the nipple had been a congenital condition, and the puckering and adhesion of the skin to the surface of the tumour were due to the cicatrix of an abscess which had attacked the breast twelve years previously. The tumour in the breast was a chronic abscess, which was subsequently opened, and a good recovery ensued.

Case 5.—Chronic Inflammation of the Right Breast, simulating Cancer: Recovery: True Cancer of the Left Breast one year later, and Death.—Susan W., aged 48, a married woman with one child 22 years of age, came under my care at Guy's Hospital on November 27th, 1865, for some affection of her *right* breast. It had existed for two months had come on gradually without any known cause, and was the seat of a dull aching pain which passed down the arm. The skin over the part was also cupped, and slightly adherent to the gland beneath. The axillary glands were quite healthy. To the hand, the swelling was clearly

due to an infiltration of the mammary gland. The local symptoms in this case, as in the last, tended to indicate the presence of a cancer; the age of the patient likewise went to support the idea. The history of the patient, however, did away with such an opinion; for it was discovered that the cupping of the skin was due to the cicatrix of an old abscess which had existed twenty-two years previously. Under tonic treatment this patient rapidly recovered, all induration of the breast disappearing. It is interesting to observe, however, that this patient reappeared one year subsequently with a genuine cancerous disease of the *left* or opposite breast, which went on rapidly to develope and to destroy life.

Case 6.—*Chronic Induration and Suppuration of the Breast simulating Cancer, in a Woman aged* 64.—Hannah N., a married woman, aged 64, came under my care at Guy's Hospital in October, 1859, for some affection of her right breast. It had been coming on for about six weeks, the glands having become gradually hard and painful. When I saw her, the breast was generally much indurated and formed a globular firm swelling; manipulation caused some pain. The nipple was slightly retracted. The axillary glands were free from disease. The skin over the tumour was mobile and healthy. The tumour moved freely upon the parts beneath. The local symptoms, together with the age of the patient, and the total absence of any external signs of injury or history of accident, were enough to excite the idea of the tumour being cancerous; but it was not so; for in about a week pus escaped from the nipple, and, in another, fluctuation was felt deeply seated below the nipple. The abscess was opened, and in about a month a good recovery ensued.

Case 7.—*Chronic Inflammation of the Breast in a Single Woman, simulating Cancer.*—Ellen A., aged 56, a single healthy woman, came under my care at Guy's Hospital, on July 3rd, 1865, for some affection of the left breast. It had been coming on for about three weeks without any known cause; the breast gradually becoming hard and painful. When I saw her, the whole gland was infiltrated with some new product, inflammatory or otherwise. It was indurated and tender on manipulation. There was no enlargement of the axillary glands. The nipple was completely drawn in, and out of sight. The skin over the breast was healthy and the tumour moved freely upon the parts beneath. The case was one of a doubtful kind; the age of the woman and the local symptoms raised a suspicion of its being of a cancerous nature, and yet its progress had been somewhat too rapid for the generality of such cases. On inquiry, also, it was found out that the retracted nipple was a congenital condition. Tonics were given and the case was watched. In a fortnight

distinct evidence of inflammation of the skin appeared with indistinct fluctuation. In another week an abscess was opened, and rapid convalescence followed.

Case 8.—Chronic Abscess in Breast with Retracted Nipple.—Sarah M., a childless married woman, aged 20, came under my care at Guy's Hospital, on December 30th, 1863, for some enlargement of the left breast. It had been gradually coming on for eight months, after a blow. The swelling was accompanied with a dull pain, and the gradual retraction of the nipple. When I saw her the breast was clearly much enlarged, the whole gland forming a firm semi-elastic tumour; the nipple had completely disappeared. The skin over the tumour was healthy, as were the axillary glands. The gradual enlargement of the breast with retracted nipple might probably have induced a surgeon, who put too much value in such symptoms, to suspect a cancer, although the age of the patient and the history of a blow forbad the entertainment of such an idea. The case turned out to be one of a chronic abscess. It was opened, and a good recovery took place.

Case 9.—Chronic Inflammation of the Breast simulating Cancer: Recovery.—Mary R., a married woman aged 41, the mother of nine children, came under my care at Guy's Hospital, on Aug. 25th, 1864, for some affection of her right breast. It had been coming on for about nine months, and was accompanied with pain. The gland had been gradually becoming larger and harder, and the nipple had been slowly retracting. When coming under observation, the breast appeared as a firm globular enlargement and the nipple was quite out of sight. The tumour moved freely upon the parts beneath, and the skin over it was quite free. There was no enlargement of the axillary glands. The age of the woman and the general appearance and condition of the breast indicated the presence of a cancer; and to those who looked upon the retracted nipple as a definite sign of such a disease, the diagnosis would have been complete. On inquiry however, into the history of the case, it was elicited that the induration of the breast had gradually appeared after her last confinement, in which she lost her child, nine months previously; and that the possibility of the disease being of a chronic inflammatory nature was rendered probable. This view of the case turned out to be the right one; for in the course of one month an abscess appeared which was opened near the nipple, and in three months a recovery was declared. The nipple, however, continued somewhat retracted.

Remarks.—There would be no difficulty in quoting other cases to illustrate more fully the subject of this communication; but I trust I have brought forward sufficient to indicate the quarter in which some of the difficulties of diagnosis are to be found,

and the means by which errors of diagnosis are to be avoided. I have pointed out how, in cases of chronic inflammation of the breast-gland, nearly every local symptom found in cancer may be simulated; and how necessary it is for the surgeon to make a careful inquiry into the history of every case, to understand how each symptom is produced, and to weigh the value of every point before giving a diagnosis. I think that I have demonstrated that local symptoms will constantly mislead when taken by themselves, and that they can only be correctly interpreted by the antecedent points connected with their history. In all the examples of disease which I have just brought forward, the surgeon would doubtless have been misled, had he trusted to local symptoms, and had he failed to inquire into the facts touching the history of the cases from an early period; for, in many of the examples, the symptoms which appeared characteristic of cancer turned out fallacious, and were due either to a congenital condition of the parts, or to an old or recent inflammatory affection.

I trust I have also demonstrated, by the quotation of cases, the value of an exploratory puncture with a needle into the centre of certain cases of tumour, when the nature of the disease is doubtful. In cancerous cases, the puncture will do no harm; in inflammatory cases, it will dispel the doubt. It will often turn doubt into certainty, and save errors of diagnosis, as well as of practice.

By way of conclusion, I will observe that *cancers* generally attack the breasts of women during the functional decline of the mammary gland, that is after 40 years of age, and *inflammatory* affections during the period of its functional activity; that nearly every local symptom of cancer may be simulated by chronic inflammation of the breast; and that the careful consideration of the history of the case will alone enable us to escape error. In all cases of disease of the breast, let it be therefore our rule to inquire into the history of the case, and the gradual development of the symptoms, before giving a diagnosis; and, in certain doubtful cases, let it be our practice to explore the tumour by means of a needle before giving an opinion, and certainly before we act upon it.

By adopting, or rather acting upon, these suggestions, we shall often be saved from serious errors; we shall render our practice more certain, and consequently more successful.—*British Med. Journal, Dec.* 12, 1868, *p.* 601.

ADDENDA.

102.—AN IMPROVED SYRINGE-PIPE FOR HYPODERMIC INJECTION.

By Dr. Thomas Buzzard, Assistant-Physician to the National Hospital for the Epileptic and Paralysed.

Those of us who are most favourably disposed towards the hypodermic injection of drugs are yet obliged to allow that our patients not unfrequently object very strongly to the pain occasioned by the introduction of the syringe-tube. And we sometimes find it as hard to convince such persons that they are not being hurt as the shoemaker did to prove to Lord Foppington that his shoe was not too tight. "Your lordship," he said, "may please to feel what you think fit; but that shoe does not hurt you. I think I understand my trade!" A syringe-tube which I have lately had made will, I hope, do something to extend the hypodermic method by the facility and comparative painlessness of its introduction. The ordinary syringe-tube, it will be remembered, is, of gold or silver gilt, and is tubular to the very end, which is sharpened as well as the somewhat soft material allows. Steel tubes of the same form are sometimes employed, but they quickly corrode and get choked. It occurred to me that it was quite unnecessary for the syringe-pipe to be tubular *throughout*, and that a gold tube might with advantage be fitted with a *solid* steel spear-point of the best form for penetrating the skin. At my request, Messrs Meyer and Meltzer, of Great Portland-street, have attached a triangular steel prism to the ordinary gold tube, and thus constructed an instrument which pierces the skin as easily as the "glover's" needle, which is preferred to all others, by many surgeons, and which the termination of the tube closely resembles. The advantages of incorrodibility in its tubular portion, and sharpness of point, are thus combined. The point is wiped by simply passing it between the thumb and finger. —*Lancet, March* 20, 1869, *p.* 397.

103.—HYPODERMIC MEDICATION IN GOITRE.

Prof. A. Lücke, of Berne, reports in the Berlinea Klin. Wochenschrift, No. 25, 1868, a very interesting case of this disease cured by the subcutaneous injection of tinct. iodinii

fort. (1 : 8). He made the injections at several spots, and at intervals of eight days. He began with four to five drops, and at last got up to two Paraz's syringes full. Until the larger quantities were used, no local or general reaction followed; and only then could iodine be detected in the urine. After four months' treatment, the patient was so far improved that only a few very hard small knots could be felt where the tumours had been.

In the October number for 1867 of the Archives Générales, Dr. A. Luton de Oviens publishes the results of a similar treatment; he gives the account of eight cases which were more or less perfectly cured; in one case suppuration occurred.

Luton and Lücke mention two successful cases in which the same treatment was applied for the cure of chronic enlargement of the lymphatic glands.—*Medical Press and Circular, Jan.* 20, 1869, *p.* 63.

104.—THE SUBCUTANEOUS INJECTION OF ATROPINE.

A country practitioner sends the subjoined note :—

"The following facts, in connexion with the subcutaneous injection of the sulphate of atropia, may be interesting to some of the readers of the Practitioner. Shortly after the practice was introduced, I commenced it with a patient, and for the last eight years have daily used it for the same person. I dissolve three grains in half an ounce of distilled water, and this suffices for exactly fourteen injections. The toxic effects of the drug are confined to a dryness in the throat, a difficulty of swallowing for four or five hours after, if attempted, and dilatation of the pupils; nearly always, however, sleep follows in a few minutes. There is no waste of the atropia solution, except what must adhere to the inside of the barrel of the syringe. Owing to the danger said to exist (in books and periodicals) in giving the atropia, except in very small doses to commence with, I have only used it (and that once) in two other cases—doses the same as in the first instance :—Acute lumbago; pain removed in half an hour; toxic effects well developed; quite cured. Subacute lumbago of some three months' duration—toxic effects very slight; remedial the same.—*Practitioner, Feb.* 1869, *p.* 126.

105.—ON DISINFECTION WITH CARBOLIC ACID VAPOUR.

By Dr. James B. Russell, Physician to the City of Glasgow Fever Hospital.

[Any agent employed to purify the air in such a place as a fever or cholera hospital, or sick room in a private house, where the

case is one of an infectious nature, should be one which is respirable without injury or irritation to the lungs. Chlorine and sulphurous acid gas are inapplicable as being both very obnoxious. It occurred to Dr. Russell to try carbolic acid, and the method he employed is thus alluded to in the "Report on Cholera Hospitals," incorporated in the "Report of the City of Glasgow Fever Hospital for 1866-7."]

"Having observed how readily carbolic acid distributed itself through the atmosphere of a room along with steam, I placed in each ward a gas-evaporating stand, by means of which the steam of a solution of the acid and water was constantly thrown off." (p. 35.) The arrangement thus alluded to was simply a stand, supporting a small tin vessel containing carbolic acid and water, having beneath a Bunsen's burner supplied with gas by a flexible tube. This stood on the table in the centre of the ward; and the nurse was instructed to supply water when required, and acid so that a little might always be seen still undissolved. In the temporary hospital at Greendyke, American stoves were used for heating, and the vessel was simply placed in the round aperture provided on the top of each. By this means the moisture so necessary where such stoves are employed was also supplied to the atmosphere. The device thus adopted for cholera hospitals was continued in the City of Glasgow Hospital when it reverted to its original use—the treatment of fever. As perceived by the sense of smell, the effect was a mild odour of carbolic acid in all parts of the wards. What benefit accrued to the patients and attendants can hardly be estimated. That the agent was present to a degree sufficient to be obnoxious to animal life was shown by the circumstance that, during the hot summer of 1868, the flies, which were so numerous and annoying in wards not so fumigated, were only occasionally seen in wards furnished with the evaporating apparatus. Flowers placed on the window-sills were not affected, but pendant plants hung from the joists immediately over the table referred to above soon died.

Recently I improved the arrangement by adopting porcelain instead of tin basins, which were soon perforated by the action of the gas-jet externally and the acid internally. I also added a small flat porcelain cup, containing the pure acid, so as to combine with the evaporation of the aqueous solution the evaporating influence of a water-bath. The result has been very greatly to increase the amount of the disinfectant circulating in the atmosphere. It is strongly perceptible in every part of a ward 48 feet long by 20 wide.

As to the practical benefit of this process, I have already stated that I am unable to say this or that has been the result.

In the first place, this much may safely be asserted, that *no* harm can be done. The odour is aromatic and agreeable to most persons, though not to all. Some find it repugnant. It is in this direction we must look for the benefit—in the cleansing of the air for the use of attendants and patients, not in the "cutting short" of disease in individual cases. By this, and disinfecting powders in the night-stools, with good ventilation, it may be made quite certain that the poisonous effluvia of one patient will not reach another. Dr. Lemaire proves by every variety of experiment that "water containing a *hundredth* of the acid is sufficient to destroy all the small noxious animals, and that a *thousandth* will arrest and prevent putrid fermentation" (p. 208.) In particular he shows that the *mere vapour* of a few drops of the pure acid at the bottom of "a large jar in direct communication with the atmospheric air" will soon cause the mould on a piece of putrid flesh exposed to the air in the jar "to droop and wither" (p. 59.) Although fully alive to the importance of the use, in hospitals, of an agent so inimical to the lower forms of life, Dr. Lamaire does not suggest any method of constantly supplying it to their atmosphere. The simple plan described in this short notice effects this thoroughly. I am induced to make a memorandum of it, because, there being no doubt of the efficiency of carbolic acid as a disinfectant an *easy* method of disseminating it is alone requisite to ensure its more frequent use in circumstances which so often occur, in which not one isolated act of disinfection is required, but a continuous process. Such circumstances are found in hospitals, we may say all hospitals, but especially those in which lesions of surface exist, such as surgical and lying-in hospitals; and those in which infectious diseases are treated, such as fever, small-pox, &c. In those institutions a permanent apparatus ought to be contrived. Private practitioners also frequently require this perpetual atmospheric disinfection. Fumes from chloride of lime or open vessels of carbolic acid are not very efficient; and the evolution of chlorine or sulphurous acid is both difficult to control and very disagreeable, and in the better class of houses also detrimental to metal surfaces. It would, on the other hand, always be easy to devise some modification of the water-bath method of distributing carbolic acid. A porcelain cup placed on the round aperture of the globe above the gas jet, having afloat in it another much smaller cup containing pure acid, or a large basin of boiling water renewed from time to time, and bearing a common saucer full of pure acid on its surface, suggest themselves as two out of several plans which might be adopted. My friend Dr. Wood Smith lately used a common retort stand and evaporating dish, with flexible tube and gas jet, during the progress of a virulent case of diphtheria in private. I am not

aware that this idea has been systematically carried out in any hospital but that which I attend. It has been partially tried in the Town's Hospital, and in the fever-house, Royal Infirmary. —*Glasgow Med. Journal, Feb.* 1869, *p.* 210.

106.—NEW VAPORIZER FOR CARBOLIC ACID.

Messrs. Salt, of Birmingham, have constructed a very ingenious and well-designed apparatus for the vaporization of carbolic acid. It consists of a receptacle for the acid, covered by a finely-perforated lid. Beneath the receptacle is an air chamber, and beneath this chamber is a recess for a spirit-lamp. Two or three tablespoonfuls or more of carbolic acid (if in the liquid form), or a portion of the crystals, having been placed in the proper receptacle, the lamp is lighted, and in few moments the acid begins to evaporate, and the vapour is diffused into the atmosphere of the apartment through the perforated plate. The apparatus (as we have tested) is an excellent addition to the sick room when it is found desirable to use carbolic acid as a disinfecting agent. It can be manipulated so as to keep the atmosphere charged with a distinct and not unpleasant odour of the acid, and will be found particularly handy and useful in private houses.—*Lancet, Feb.* 20, 1869, *p.* 262.

107.—ON A METHOD OF CONVERTING THE SKIN INTO LEATHER.

By John Martin, Esq., Undergraduate in Medicine, Queen's University, Cork.

It becomes sometimes advisable in surgical practice to render parts of the surface of the body tense, and firmly pressed on to the subjacent tissues. This pressure is generally effected by bandages, strips of plaster tightly applied, direct pressure by weights, &c. But it does not appear that surgeons have hitherto adopted a more convenient and effectual method of applying pressure, when such is required, more uniform than great; namely, that of converting the cuticle into a temporary bandage. This may be done by forming a tannate of gelatine in the skin. Ordinary solutions of tannine applied to living tissues act astringently, by causing contraction of blood-vessels, as is seen by the paleness produced in mucous membrane by such application. A very strong, or a saturated solution of this substance, however, applied to the external surface of the body, combines chemically with the gelatine of the skin, before reaching the vessels, forming a contracted impermeable layer of

tannate of gelatine; it, in short, tans, or converts into leather, the superficial layer of the cuticle.

The practical application of this fact is sometimes useful, as in the affections presently to be referred to. These may be classed in five divisions, according to the *modus operandi* of the remedy. They are those in which its curative effects depend on *(a)* the *insensibility; (b) contraction; (c) impermeability; (d) contraction* and *impermeability* combined; *(e) removal of part*, of the skin, which are caused by its application. As examples of these effects may be mentioned, *(a)* the relief of pain caused by external pressure on tender parts, as the integument covering abnormal projections of bone (as the spinous process of a prominent vertebra, in Pott's curvature, for example), where there exists no corresponding natural thickening of the skin, or in bunions, relieving the abnormal sensibility of the part; likewise the prevention of bedsores of any kind, if applied at the commencement before the skin breaks. *(b)* The binding down of the subjacent parts by contraction and slight pressure, as, for example, in weakening of the abdominal wall, and protrusion of the internal oblique muscle, by a long split in the external oblique, in the direction of its fibres (an occasional effect of falls from scaffolding, &c.,) too extensive for the truss; reducing an enlarged testicle, by first drawing the integument tense, and retaining it by means of a strap of plaster encircling tightly the cord, immediately above the gland, and applying the solution. *(c)* By its impermeability it checks and prevents unhealthy local sweatings. *(d)* By its early application it causes the absorption of matter deposited in the tissues, which may otherwise point at the surface. Its action, last mentioned in the above enumeration, *(e)* renders it useful in the treatment of cutaneous affections which depend on a local cause, as the layer which it forms peels off after a short time, removing, when they exist, such parasites as the *pediculus pulex penetrans*, *acarus scabiei*, *entozoon folliculorum*, *&c.* The strength of the solution of tannine required for the purposes mentioned is about 600 grains to an ounce of water. It may be applied, according to circumstances, by a layer of lint or wadding, saturated with the solution, or by means of a brush.

There are three points which must be attended to in using this remedy. *Cold water must be employed*, otherwise a solution of pyrogallic acid is used, not of tannine. *The solution must be quite recent*, and prepared in small quantities at a time; and the *tannine employed must be perfectly fresh*, for, unfortunately, tannine remains but a short time exposed to the atmosphere without being converted into gallic acid. It will be remembered that gallic and pyrogallic acids do not form *insoluble* compounds with gelatine.—*British Medical Journal, March* 20, 1869, *p.* 258.

108.—THE ADVANTAGE OF ADMINISTERING COLOCYNTH IN THE FORM OF TINCTURE.

By Dr. R. W. Crighton, Leamington.

The value of colocynth in cases of habitual constipation, and likewise as a revulsant in head-affection, has been long understood; but seems to have been not quite sufficiently appreciated in this country, from the drug having generally been used in the crude state.

The tincture, as employed in Prussia and admitted into the national Pharmacopœia, is a much more agreeable and convenient method of using it; the small dose required—ten to twenty minims—being easily combined in the same mixture with tincture of hyoscyamus, bromide of potassium, or other medicinal agents. Next to croton-oil, it seems to have the greatest effect among purgatives in diminishing hyperæmia within the cranium; and, in cases of threatened or actual cerebral hemorrhage, its administration with tincture of hyoscyamus and bromide of potassium, I have frequently seen attended with the best results. In habitual constipation, ten, or even five, minims in a little water an hour before breakfast generally suffice to ensure a full evacuation, without much inconvenience, or the dose requiring to be increased.—*British Med. Journal, Nov.* 28, 1868, *p.* 572.

109.—ON THE THERAPEUTICAL VALUE OF PEROXIDE OF HYDROGEN.

By Dr. Benjamin W. Richardson, F.R.S.

[The following paper gives a fair resumé of what is known respecting peroxide of hydrogen—its history, preparation, and therapeutical value. Peroxide of hydrogen was discovered by Baron Thénard in 1818, and he gave it the name of deutoxide of hydrogen. Since his time its nature and properties have been investigated by various chemists.]

Of late days the speculations of Schönbein relative to ozone, have caused the peroxide to be discussed more than formerly, in the way of speculative chemical philosophy.

The Preparation of the Peroxide of Hydrogen.—The chemical proposition for the formation of the peroxide of hydrogen was given by Thénard, and it stands unaltered. Gmelin thus condenses it:—

When peroxide of potassium, sodium, barium, strontium, or calcium is digested in any hydrated acid which forms a soluble salt with the salifiable base resulting from the decomposition of the peroxide, the excess of hydrogen does not escape as gas, but passes over to a portion of the water, and converts it into *peroxide of hydrogen.*

To carry out the manufacture, it is therefore necessary to obtain one of the above-named peroxides in the pure state. It has been up to this time most practicable to select out of the list the peroxide of barium, a specimen of which I hand round. This peroxide is made either by placing pure anhydrous baryta —obtained from the decomposition of the nitrate by heat—in a glass or porcelain tube, heating to redness and passing through the tube a current of dry oxygen; or by heating togther in a platinum crucible anhydrous baryta and chlorate of potassa. The first of these processes is the readiest and, I think, best. The baryta used must be freed, as far as possible, from foreign matter, particularly from manganese, and the oxygen gas must be entirely freed of admixture with carbonic acid. If either of these substances be present in making the peroxide, the result will be altogether a failure, inasmuch as both these substances have the property of evolving the oxygen with which the hydrogen is to be afterwards charged as fast as the oxygen itself is produced. The proofs that peroxide of barium is pure are these: —It should present a greyish-white surface, free from green specks. Powdered and slaked with water, it should form a paste without evolution of heat. It should be entirely soluble in diluted hydrochloric acid.

In making the peroxide of hydrogen, the further processes are carried out as follows :—We take, say, twenty fluid ounces of distilled water, and add two fluid drachms and twenty minims of pure hydrochloric acid. We make the acid mix thoroughly with the water. Then we take two drachms and ten grains of the peroxide of barium, reduce it to powder, place it in a porcelain or glass basin, and pour on it a little water, until it is made into a soft paste. With a glass or boxwood knife (an iron spatula must not be used), we gently add the paste to the acid solution, stirring until all is dissolved; if a precipitate occurs, a minim or two of hydrochloric acid must be added to take up such precipitate. In this step of the process we transform the baryta into the soluble chloride of barium, and at the same time charge the water with one volume of peroxide of hydrogen. The salt of barium, which is soluble, and is in the solution, must next be removed. This is done by adding very cautiously one drachm and a half of dilute sulphuric acid. (The acid must be diluted to one part in three of water.) The sulphuric acid must be added slowly, so that heat be not evolved. The baryta will in this way be all precipitated in the form of insoluble sulphate. The solution at this stage must be set aside for a while to allow the whole of the sulphate of baryta to subside. The clear solution must be poured off as a succeeding step, and filtered through Swedish filter-paper. We have now a solution containing its own volume of peroxide of hydro-

gen, as before, and again the portion of freed hydrochloric acid in lieu of chloride of barium. To this solution we re-add peroxide of barium, afterwards sulphuric acid, and so on by repetition until the water is charged with oxygen to the amount required by the operator. By care and in time water may thus be charged with thirty volumes of oxygen.

If it be required to obtain the peroxide of hydrogen in a free state by the removal of the hydrochloric acid, we pursue the steps of the process thus :—

To the solution charged with the peroxide of hydrogen and the hydrochloric acid we add carefully sulphate of silver. Chloride of silver is thrown down, and the sulphate is added until precipitation ceases. The chloride of silver is then separated by filtration. The solution obtained consists of peroxide of hydrogen, water, and free sulphuric acid. The last step is to add baryta to the solution until all the sulphuric acid is fixed as a sulphate of baryta; this is removed by deposition and filtration, and pure peroxide of hydrogen remains in the water.

If it be the wish of the chemist to obtain the peroxide of hydrogen in a concentrate form, he charges a smaller portion of water, by the steps I have given above, with thirty volumes of oxygen. Then he places the solution he has made under the receiver of an air-pump with sulphuric acid around to absorb water. In this condition water uncharged with free oxygen first passes off, and at last a fluid is left which may be considered as absolute peroxide of hydrogen. It yields 475 volumes of oxygen, and evaporates under the air-pump altogether.

Simple methods of making peroxide of hydrogen have been proposed. Pelouze suggested the manufacture by adding the peroxide of barium to a solution of hydrated hydrofluoric acid. Fluoride of barium is thus thrown down, and peroxide of hydrogen is produced in solution. Taking it all in all, I consider Thénard's original process to be the best.

Therapeutical Uses of Peroxide of Hydrogen.—My first object in introducing peroxide of hydrogen into medicine was to test it as a remedy for diabetes. The theory that diabetes was a disease attended with a deficient oxidation was at one time extremely popular. I thought it, therefore, fair to ascertain whether a remedy rich in oxygen would be of service in marked cases of this disease. I soon afterwards began to test the medicine in other forms of disease, not on any particular theory of its action in every case, but if I may so say, empirically, in cases where severe and long-continued symptoms were not amenable to ordinary plans of treatment; thus in time—extending now over ten years—I have got together a large collection of facts respecting the effects of the substance in different disorders, which I will epitomise under distinct heads.

Diabetes.—I have tried the remedy now fairly in eleven cases, and in three so rigorously that nothing, I think, remained undone to make the experience crucial.

In the first of these three cases the administration of the remedy was attended with such remarkable signs of improvement that the patient (a woman) came to the conclusion that she was cured. During the first eight days the renal secretion was reduced from five to two pints, and on the eighth day the specific gravity, which had been 1045, had come down to 1023. The medicine was now suspended for four days, with immediate increase of the amount of secretion to five pints. The medicine again resumed, there was immediately a cessation of the diuresis. This continued until the eleventh day, on which day only two pints of urine were passed in the twenty-four hours. At this point symptoms of hemiplegia, which had twice before appeared, recurred, attended, as they had also been previously, with epileptiform convulsions, in the course of one of which attacks she suddenly expired. The results of this case left me in doubt as to the influence which the medicine might have had in arresting the saccharine secretions; for it has been observed by Dr. Garrod and other physicians that the elimination of sugar during diabetes is often temporarily arrested by the occurrence of new changes of disease in the system. I held the matter, therefore, open as subject to further inquiry. The quantity of solution taken by this patient averaged three fluid drachms a day; the strength of the solution was ten volumes.

The second case was that of a child 8 years of age. She had been suffering from diabetes for eight months at the time when she was presented to me. At this period the specific gravity of the urine was 1058, and the quantity passed fifty ounces per day. On October 22, she commenced to take the peroxide in drachm doses three times daily, which were to be increased to doses of three drachms; the quantity of urine passed was accurately measured, and the specific gravity taken twice daily. At the end of seven days the specific gravity stood at 1043, and the quantity passed was sixty ounces per day. The treatment was now continued for twenty-three days, the dose of peroxide being increased to half an ounce, when observations were taken for four days with the following results. On the first day the quantity of urine was seventy-seven ounces, specific gravity 1046; on the second sixty ounces, specific gravity 1041; on the third seventy-three ounces, specific gravity 1046; and on the fourth seventy-three ounces, specific gravity 1040.

For a period of four days the peroxide was withdrawn, during which time seventy-six ounces were passed daily, with a fluctuating specific gravity; the medicine was then resumed, five minims of the tincture of muriate of iron being added to

each dose, and this was continued for seven days. During this period the quantity of urine varied from seventy-five to ninety-one ounces; and from this point until the time of her death, two months later, the results were in the main the same, the peroxide having been for several weeks withdrawn, and various other kinds of treatment, such as opium, gallic acid, and cod-liver oil having been instituted in the place of it. Throughout, the greatest attention was paid to the dietary. The ultimate and fatal ending of the case was somewhat sudden, and probably arose from cerebral complication. If any inference is derivable from this case, it is to the effect that, during the time the peroxide was being administered, there was a decrease in the specific gravity, with increase in quantity. I have known the same to occur under other forms of treatment.

The third case of diabetes occurred in a man, by trade a plasterer. It was obviously connected with cerebral disturbance, as the patient suffered from frequent attacks of vertigo. The quantity of urine passed often exceeded eighty ounces per day, and the specific gravity averaged 1040. He took peroxide of hydrogen for five weeks, in doses of three drachms, three times daily. The symptoms for the first few days were materially relieved; after a time they returned to their original intensity, and at the end of the fifth week the man was in the same condition as at the beginning. This man being an infirmary patient left the institution with which I was connected, and I have been unable to follow out the history of his case further.

In two cases of diabetes with phthisis which came to me very late in the progress of the disorders, and were, in truth, fatally disabled by the pulmonary disorganisation, I treated one for three, the other for four weeks, with the solution in doses of three drachms three times daily. In both it seemed that the medicine increased the quantity of urine, while it decreased the quantity of sugar. They both ended fatally, the phthisical symptoms being the cause of death. From these experiences, and six others similar, I am obliged with regret candidly to state that at this moment there is no proof that peroxide of hydrogen is of specific value in the treatment of diabetes.

Struma.—Two cases of struma were treated. They were well-marked instances of the disorder: one in a child, the other in an adult. In both there was great enlargement of the cervical glands without suppuration. In one case iodine had been applied externally for many months without any improvement. I did not withdraw the iodine, but ordered the peroxide solution in addition. The case rapidly recovered; but as iodine was a conjoint remedy, it would be unfair to give the credit to the oxygen.

The second case had the advantage of being free from the

above objection. In it no previous treatment had been pursued, and the peroxide was alone administered. To my surprise, the glandular swellings gradually disappeared, precisely as under the influence of iodine itself.

I had another case of struma with purulent deposit. A boy intensely anæmic was brought to me in the summer of 1863 with suppurating glands in the neck, and purulent discharge from chronic abscesses in six other parts of the body. He was placed on the peroxide solution, with five minim doses of tincture of the muriate of iron. He bore the solution well, and continued it for many months. He so far recovered that his friends thought it unnecessary to continue their visits, and during the autumn he enjoyed very good health. In the beginning of the following year the symptoms returned, despite the most careful attention to diet and regimen, and he was brought to me again with three enormous abscesses, one of which I was compelled to lay open. He took the peroxide this time without iron, and made a slow but good recovery.—*Med. Times and Gazette, Dec.* 12, 1868, *p.* 661.

110.—ON THE THERAPEUTIC ACTION OF ACONITE AND ITS PREPARATIONS.

By Dr. Sydney Ringer, Prof. of Therapeutics at University College, and Physician to University College Hospital.

Of all the drugs we possess, there are certainly none more valuable than aconite. Its virtues by most persons are only beginning to be appreciated, but it is not difficult to foresee that in a short time it will be most extensively employed in the diseases immediately to be noticed.

As external applications, the liniment or ointment is used to relieve pain. They appear to possess power over pain of different kinds. In the neuralgias of the brow or face these applications are sometimes of the greatest use, and often relieve, either permanently or temporarily, the distressing pain of these complaints. But while in many instances their effects are immediate and permanent, yet it must be confessed that in the majority of cases the pain is unaffected. Neither can we, with our present knowledge, predict with any certainty the cases in which the application will be useful, or those in which it will fail. This much, however, is ascertained, that those neuralgias which depend on decayed teeth or diseased bone, or on tumours pressing on the nerves, are beyond the control of aconite. But these are not the only forms of neuralgia over which aconite cannot prevail. No doubt in some instances the failure can be explained by the badness of the preparation ; but even when this is excel-

lent, it is not uncommon for the pain to remain unabated after the application. As, however, no harm can possibly follow their employment, they should always be tried ; and if unsuccessful, then recourse can be had to other modes of treatment. If aconite succeeds at all, it will succeed at once ; and hence, if no relief is speedily obtained, it is useless to continue its employment. The preparation should be sufficiently strong to produce decided numbness and tingling in the skin over which it is rubbed ; and, where of service, these sensations replace the pain, which does not return when the effects of the aconite have worn off.

The ointment and liniment should be applied with friction, which very greatly heightens their activity. Of the ointment, a piece the size of a pea or bean should be rubbed into the skin till it has disappeared. Care should be taken while using these powerful and poisonous applications that they are not rubbed into wounds or cracks of the skin, nor brought into contact with absorbent tissues, such as mucous membranes and the conjunctiva of the eye. Spinal irritation and intercostal neuralgia may in many instances be removed by aconite ointment, and sciatica sometimes yields to the same remedy. The former complaints are better treated by the belladonna preparations.

When employed internally, the following sensations are experienced, the graver appearances and symptoms occurring only when a considerable dose has been taken. There is first a feeling of warmth at the pit of the stomach, with sometimes nausea and vomiting. The feeling of warmth spreads over the body, and there is soon perceived tingling of the lips and tongue and adjoining parts ; the uvula with the tongue feels as if it were swollen, and too large for the mouth, and deglutition is frequent. If the dose has been a large one, the tingling and numbness are felt in the tips of the fingers, and thence spread over the whole body, and are accompanied by diminished sensibility and some muscular weakness, which, if the dose is a considerable one, becomes extreme, and is one of the most prominent and important symptoms of the drug.

On the circulation and organs of respiration its action is most noteworthy. With moderate doses the number of the heart's beats are much lessened, and may sink to 40 or 36 in the minute. After a larger and dangerous dose, the pulse rises in frequency, and may become irregular. With some persons such irregularity follows even a small quantity of the medicine. Whether the frequency be increased or lessened, the pulse always loses strength, and hence the circulation is retarded. The effects on respiration are very similar. By moderate doses the breathing grows slower; but after large and poisonous quantities it is often short and hurried.

During the administration of aconite cutting pains are often complained of in the joints and other parts of the body, and there sometimes breaks out on the skin an eruption of itching vesicles. Delirium occurs in some cases, but often after fatal doses the mind remains clear to the last. In some cases which have ended in death there has been found blindness, and deafness, with loss of speech.

When death is produced by this drug, the muscular weakness is extreme, and frequent faintings occur. Death from aconite appears to be due to syncope. On account of its power to diminish sensibility, aconite has been used internally in various painful diseases; but other remedies have, for the most part, superseded it for the relief of pain.

It is on account of its power to control inflammation and subdue the accompanying fever that aconite is to be most esteemed. The power of this drug over inflammation is little less than marvellous. It can sometimes at once cut short the inflammation. It does not remove the products of inflammation when these are formed, but by controlling the disease, it prevents the formation of these, and so saves the tissues from further injury. It is, therefore, in the early stage of inflammation that the good effects of this plant are most conspicuous; still, although the disease may have progressed to some extent, and have injured the organs by the formation of new and diseased products, while the inflammation is extending aconite does good. It is useful wherever there is acute inflammation of any tissues of the body. The good it accomplishes can be shown both by the amelioration of the symptoms, and, still better, by the changes it effects in the inflamed tissues when these are visible, as in pharyngitis, tonsillitis, &c.

As might be expected, the results of aconite are most apparent when the inflammation is not extensive, or not very severe, as in the catarrh of children, or in tonsillitis, or in acute sore-throat. In these comparatively mild diseases, especially if the aconite be given in the earliest stage of the inflammation, when the chill is still on the patient, the following consequences will very generally be witnessed:—In a few hours the skin, which before was dry, hot, and burning, becomes comfortably moist; and, in a little time longer, it is bathed in a profuse perspiration, which may be so great that drops of sweat run down the face and chest. With this appearance of sweat many of the distressing sensations—such as the restlessness, chilliness, or heat and dryness of the skin—are removed. At the same time the quickened pulse is much reduced in frequency, and, in a period of twenty-four to forty-eight hours, it and the temperature have reached their natural state. It is rare that a quinsy or acute sore-throat, if caught at the commencement, cannot be

disposed of in twenty-four to forty-eight hours. The sweating may continue for a few days after the decline of the fever on slight provocations; but it then ceases.

The appearance of the inflamed part also exhibits, in a striking degree, the beneficial effects of the drug. Thus large livid, red, glazed, and dry tonsils may often in twenty-four hours have their appearance completely altered. If the medicine has been given before much lymph has been formed in these organs, in the time named the swelling and most of the redness will have disappeared, and the mucous membrane will have that look which proves the acute inflammation to have subsided—namely, it has become moist, and is bathed with mucus or pus. If just at this stage some strong astringent—such as glycerine of tannin—be applied, most of the remaining diseased appearance and the pain, if it continues, will be removed. Such are the visible effects of aconite on inflamed tonsils, &c.

These statements are not exaggerations; but the simple truth, as may be witnessed by those who will employ the aconite in the way to be immediately mentioned.

Its effects on catarrhal croup are as conspicuous. In a few hours the urgent dyspnœa is removed; and in a short time longer the fever is subdued. Severe colds, in which there is much chilliness with great aching of the limbs, with a hot, dry skin, and quick pulse, may be equally well treated by aconite. So, indeed, may all the slighter forms of inflammation.

The effects of this valuable drug, though not so rapid, are equally important on pneumonia, pleurisy, and the graver inflammations. These diseases may be considerably curtailed, and made much milder, if aconite is employed.

Its influence on inflammation has been ascribed by most observers to its power over the heart; and, as they truly point out, the remedy is found to be of most use in the sthenic forms of the disease; and where there is great weakness and the heart beats feebly, unless care is taken, it may do harm. The method of employing the drug has much to do with its success. As already said, it should, where possible, be given at the very beginning of the disease. Every hour is of importance; the use of the medicine should never be delayed. Of the tincture, half a drop, or a drop in a teaspoonful of water, should be given every ten minutes or quarter of an hour for two hours, and afterwards be continued every hour. If there be much prostration, and the pulse be feeble and weak, a still smaller dose will best be given.

It is not inappropriate to mention here what signal service the thermometer may render in enabling us to decide whether aconite should be given or not. When called to see a patient, and when the symptoms and physical signs are not sufficiently

developed to decide whether an acute inflammation of some deep-seated part has set in or not, this instrument will often decide the doubt. No acute inflammation can exist without preternatural heat of the body. Hence, if in a doubtful case the temperature, after a careful investigation, be found natural, the case is not one for aconite; while, on the other hand, if the symptoms, although doubtful, indicate an inflammation, the presence of an increased heat of the body will very considerably add to the probability of its existence, and will so indicate the advisability of employing aconite.

Another instance may be mentioned. After scarlet fever, as is well known, acute inflammation of the kidneys is very liable to occur. This would at once be indicated by a rise in the temperature of the body. It is therefore desirable to direct the friends of such patients to observe, night and morning, the temperature; and if this should rise beyond limits of health, they should at once commence the administration of aconite, and not allow some hours to elapse before the patient can be seen by the medical attendant. It is true the fever may depend on some other complaint than inflammation of the kidney; but it will even then probably be inflammatory in character, as from gastric catarrh, over-feeding, and the like, in all which cases the aconite will be equally efficacious.

Whether aconite is of use in the fever of acute specific disease, as scarlet fever, measles, &c., is not so certain as its power over inflammation. But although there may be some doubt whether this remedy can lessen the severity of the fever of the acute specific diseases, there is no doubt it can control and subdue the inflammatory affections which often accompany them, and which may by their severity endanger life. Thus aconite will moderate the inflammation of the throat in scarlet fever, and the catarrh and bronchitis in measles, and in this indirect manner lessen the height of the fever. It appears to be unable to shorten the course of these acute specific diseases. In the treatment both of simple inflammations and acute specific diseases, aconite may be appropriately administered in conjunction with some other remedy which may be indicated.

The treatment which has just been described will be found of value in erysipelas, in which disease belladonna may also with advantage be given. In the treatment of acute rheumatism aconite has been much praised, and from the eminence of the authorities by which it has been recommended there can be no doubt of its usefulness. Still in this complaint its good services are not so apparent as in acute inflammation. This disease has no regular course or duration, but may, untreated, last only a few days, or many months. It is difficult, therefore, to decide whether the speedy decline of the fever in some cases is a

natural decline, or has been accomplished by the aconite. It is certainly ineffectual in many cases, which appear to run their course uncontrolled by this remedy. So that it is still required to determine in what class of cases it is useful, and in what cases it is without effect. In one respect it often appears to be of service—namely, in removing the pain from inflamed and swollen joints.

Gouty pains are said by some to yield to this remedy, and it has in many instances, apparently with good results, been given to persons suffering from neuralgia.

The effect of this remedy on the heart has been mentioned. There it was shown to lessen the rapidity of the circulation. Aconite may thus be used in all cases where there is vascular excitement which it is desired to suppress, and also when it is desirable to diminish the force of the circulation. In fact, it may be given in precisely those cases which were formerly treated by bleeding.

This remedy may be employed with advantage when the menses are suddenly checked, as by cold, on account of its power to restore the flux, and so remove the distressing and peculiar symptoms which not unfrequently occur when such a disease is produced.

The "fluttering at the heart" of nervous persons, and also nervous palpitations generally yield to this remedy. Usually when such disturbances occur, more general treatment is required, but when the conditions causing the palpitation cannot be discovered or cannot be removed, then aconite may be usefully employed.

The acute stage of gonorrhœa may be well treated by a drop of the tincture of aconite each hour, and the same treatment will often remove chordee.—*Lancet, Jan.* 9, 1869, *p.* 42.

111.—ON POISONING BY STRYCHNIA.

By Dr. Chauncey Puzey, House-Surgeon to the Liverpool Royal Infirmary.

[A man, 24 years of age, was admitted into the Liverpool Royal Infirmary, on Tuesday, Feb. 18th, 1868, at 2 a.m., suffering from acute tetanic symptoms said to be the result of poisoning by strychnia. He had taken sixpennyworth of Hunter's vermin powder by mistake.]

On admission, at 2 a.m., he was cold, with feeble rapid pulse, face congested, and skin clammy; breathing short and hurried. At intervals of every three or four minutes, a spasm came on, in the form of well marked *opisthotonos*. During the spasms the respiration became hissing, jaws fixed, eyes very prominent,

face congested and livid, and the man appeared as if he would die of asphyxia.

Each spasm lasted not quite two minutes, then there was about two minutes interval, during which intervals the man was quite conscious, and described his sensations after taking the poison. Thirty minutes after admission he vomited again. (In the vomited matter, a trace of strychnia was found.) The act of vomiting was accompanied by great pain, and was of a peculiar spasmodic, jerking character. He could swallow nothing, so it was determined to try subcutaneous injection. At 2.30 a.m., one third of a grain of morphia was injected into the calf of one leg. The introduction of the needle brought on violent spasm, but in five minutes the man expressed himself as being easier than he had been for the last two hours, and the attacks became less frequent and less severe. About 3.15 they began to increase again, and a third of a grain of morphia was injected into the other leg, with renewed benefit. Shortly before this, the patient seemed so exhausted, and the pulse so feeble,—in fact, hardly perceptible during the spasm,—that small quantities of brandy and water were frequently given, at first with considerable difficulty.

At 5.30 a.m. he had been dozing a little, and the spasms had been much less violent, but they appeared to be returning a little more frequently. Their character was, however, much altered, as they came on with sudden jerks that nearly threw the patient out of bed, causing him sudden acute pain, but unattended by trismus. A quarter of a grain of morphia was injected, and the brandy stopped, as his skin was much warmer, and pulse better.

At 7 a.m. he was again seen, and was so much better that nothing further in the way of treatment was thought necessary; but every now and then a sudden jerking spasm would seize him. These gradually became less violent, and by the afternoon had altogether ceased. He suffered from considerable pain and tenderness for several days afterwards, and slight ecchymoses appeared about the legs and arms, where the spasms had been most severe.

He went out quite well in less than a week.

It appears to me that there are two or three points in this case worthy of notice.

There seems to be no doubt that the man swallowed the whole powder. Mr. J. C. Brown, B. Sc., the lecturer on Chemistry and Toxicology at the Infirmary School of Medicine, analysed a similar powder for me, and found that it contained exactly *three grains of strychnia*. (This according to Taylor is usually a rapidly fatal dose.) He vomited a little about an hour after taking the poison, but it must have been nearly two hours

before the contents of his stomach were evacuated, for the emetic given him by the surgeon who was called to see him did not take effect until he was being brought in a cab to the Infirmary, at 2 a.m.

But after this a considerable quantity of strychnia remained in his stomach, for at 2.30 he vomited again, and in a small quantity of the vomited matter, collected and analysed by Mr. Brown, there was found $\frac{1}{10}$ of a grain.

It appears probable that the absorption of the poison had been retarded to a certain extent by the state of the man's stomach, he having been drinking spirits freely that night, and that to this fact he owed his escape from speedy death within an hour.

As regards the treatment adopted, it consisted of three things—

1st, An emetic to remove the poison remaining in the stomach;

2nd, The injection of morphia, to put a stop to the convulsions, the result of the poison already absorbed; and

3rd, Stimulants to overcome the exhaustion due to the spasms.

Neither the first nor the second part of the treatment would *per se* have been sufficient. Of course, it would have been unreasonable to trust to the morphia whilst any poison might still be in the stomach; and it was evident to bystanders that the emetic alone would not have saved the man's life, as he must almost have certainly have died from exhaustion if the tetanic symptoms could not have been relieved, and his strength at the same time supported; and in no way could this so soon be effected as by the hypodermic method.

Probably many would suggest that the administration of chloroform would have succeeded as well. But, in the first place, it appeared to me that it would be difficult to combine this with the administration of stimulants and support to the patient; and again, I thought it a less safe method of treatment. For it seemed so likely that the man would die, during, or immediately after one of the convulsions, that I was fearful, lest, supposing such a thing occurred whilst he was inhaling chloroform, death might be attributed to *it*. In the Medical Times and Gazette of May 9th, of this year, and in that of the 27th of June, 1867, cases of recovery after strychnine poisoning are related where chloroform was found to act in the most satisfactory manner. But even supposing each mode of treatment to be equally safe, there can be no doubt, I think, which is the more convenient, where there is not a staff of assistants to relieve each other in the administration of the remedy.

The effect of the hypodermic injection was manifest almost immediately. In five minutes the patient expressed himself as being easier than he had been for two hours before, and in half an hour he was able to swallow frequently small quantities of brandy, without which it appeared likely that he would sink from exhaustion. To the necessity for the administration of stimulants in such cases, Mr. Phelps draws attention in his observations on one which he treated at the Northern Hospital in this town, five years ago, and which is the second of those I alluded to above. In his case, beef tea and brandy were injected into the stomach whilst the patient was under the influence of chloroform.

The effect of the morphia was only temporary, for the injection had to be repeated in three-quarters of an hour, and again in two hours more.

The change in the character of the symptoms, as the effects of the poison were passing off, was peculiar, the violent tetanic spasms gradually becoming weaker and weaker, and then being replaced by sudden short jerks or starts of apparently every muscle, occurring at uncertain intervals, and calling to the mind of the observer the slight and interrupted shocks given off by an electro-galvanic machine after it has been worked for a considerable time.—*Liverpool Medical and Surgical Reports, Oct.* 1868, *p.* 89.

112.—ON A NEW AND SIMPLE METHOD OF INDUCING ARTIFICIAL RESPIRATION IN CASES OF ASPHYXIA FROM DROWNING, STRANGULATION, CHLOROFORM, &c.

By Dr. W. P. Bain, Surgeon to the Poplar Hospital.

The author introduces a plan hitherto not known in this country, the invention of the celebrated Pacini, of Florence, which consists in placing the patient on his back on a table or bed, the operator having his abdomen against the head of the patient, placing his hands in the axillæ on the dorsal aspect, and then pulling the shoulders towards him with an upward movement at the same time. The shoulders are then relaxed, then the former movement, and so on alternately. In many cases operated on by this method the air makes a loud noise when it passes the larynx, as in snoring.

The author was so impressed with the excellence of this plan that he determined on his return from Italy to make experiments on it, as suggested to him by its illustrious inventor. He had not long, however, proceeded with these before he discovered two modes considerably superior, and throwing also somewhat in the shade the labours of Marshall Hall and Sil-

vester. In experimenting on the dead subject he employed an india-rubber tube, one end of which was tied in the trachea, and the other communicated with a small spirometer, upon the principle of Hutchinson's, so that the passage of air to and from the lungs could be easily observed by means of a scale showing cubic inches. He found that the simple process of raising the upper part of the thorax from the table by taking hold of the arms caused a considerable influx of air, varying with the angle that the arms made with the body. For instance, if the body were raised by the arms at an angle of 45° (towards the face) the inspiration would amount to, say, 20 cubic inches. If the body were lifted by the arms in a vertical direction, the amount would be 15 cubic inches, and if pulled up by the arms at an angle of 45° (towards the feet), the amount would be about 10 cubic inches. But by the first of these modes a quantity of air considerably greater than by Hall's or Silvester's plan was generally obtained.

The best and most simple method, however, which the author has discovered is founded upon those of Silvester and Pacini. He simply places his fingers in the axillæ in their front aspect, with his thumbs over the outer ends of the clavicles, and draws, with a certain amount of power, the shoulders towards him. On relaxing his hold, the shoulders and chest return to their former position, and so on with alternate motion. In this case, therefore, there is only one movement to be effected instead of three, and he avoids the fatigue of having to bear the weight of the patient's arms as well, as is required by Dr. Silvester's method. It has the advantage also of being accomplished in a more rapid manner than any other plan. As far as the author's experiments have gone, the quantity of air inspired at each movement by this plan is about 30 to Dr. Silvester's 20, and as the operation can be conducted with much greater rapidity, the author considers that at least twice the quantity of air can be inspired by this mode than by any other yet known; and he expresses a wish that a subject which is of such practical importance should be further investigated.

The paper was illustrated by lithographed tables, setting forth results of successive experiments with the various methods; and Dr. Bain explained that in the first experiment, the method of Silvester was first used, then that of Marshall Hall, then that of Pacini, then his own four methods in succession; and that the series was then re-commenced with Silvester's method again.

Mr. Bowles said that the description of the Marshall Hall method, as given by the author of the paper, was incomplete, and that, if practised as described, the method had not been fairly tried. Pressure on the spine when the patient was rolled into the prone position was an important element, and this

had not been mentioned. In cases of drowning, the first thing to be done was to get rid of the water from the lungs, it having been proved by the experiments instituted by the Committee of the Society, that this water was the chief source of danger to life. The presence of water in the lungs of drowned persons had also been shown by Professor Casper. In the case of a patient brought to St. George's Hospital, and who died there shortly after arrival, water was found in the lungs churned into foam by the air introduced by the diligent practice of Silvester's method. In a case managed by Mr. Trollope, of St. Leonard's the method of Silvester was first tried, and as the patient seemed to be losing ground, the Marshall Hall method was substituted for it. Water then flowed out of the mouth, and the patient ultimately did well. We do not usually find water in the mouth, because it escapes easily, even from the larger bronchi, during the transport of the patient; but it does not escape easily from the smaller tubes, and in them it may soon be churned into froth. There is no difficulty in the introduction of air into the chest, but the introduction of air is useless while the patient is in the supine position, and while water is retained. A person with suspended animation requires but little air, and any method will introduce enough. The important question is, By what method can the water best be got rid of? In conclusion, the necessity of perseverance, even in cases of apparent death, was dwelt upon by the speaker, and instances of recovery after prolonged immersion were related.

Dr. Silvester remarked upon the possible injury to the parts entering into and surrounding the shoulder-joints, as an objection to Dr. Bain's method. He thought it similar in principle to his own, but that it was safer to act upon the chest through the arms. He objected to frequency of artificial movement; and maintained that, if the movements were too frequent, air would not pass below the bronchi, as might be determined by the use of the stethoscope. Dr. Bain had explained in what order his experiments were to be read; and, so reading them, they seemed to show that the power of introducing air into the chest increased in proportion as the efforts of the operator were continued. Dr. Bain had been less successful with his (Dr. Silvester's) method than the Committee of the Society; and he would himself undertake to introduce into the chest by means of it, not thirty or forty, but sixty, cubic inches of air. He was himself desirous to get rid of water when it was present, but did not believe that it usually entered the lungs. He had failed to introduce it even by injection; and, if it did enter, it could not be got out again either by the Marshall Hall method, or by position. The Marshall Hall method was not new, but had been used and reported upon by the Royal

Humane Society a century ago. It was open to grave objections, and often seriously injured the patient.

Dr. Headlam Greenhow observed that Dr. Bain's method was certainly the best, if excellence could be tested by the quantity of air that was introduced. He believed that water was distinctly inhaled into the lungs in drowning, when people fell into the water in a state of consciousness, and made efforts to breathe. Water was not found in the lungs at post-mortem examinations unless they were made soon after death. It became absorbed or in some way disappeared. The period of immersion after which recovery would be possible would vary very much in different cases, and would be the longest where there had been no efforts to breathe (as when people were stunned when they fell into the water), by which water could be forced into the lungs.

Mr. Carter expressed surprise that the best means of maintaining artificial respiration had not been adverted to by any speaker. This was the application of a Faradaic current to the phrenic nerves, where they pass over the scaleni muscles, according to the method described by Professor Ziemssen. By this means patients apparently dead from chloroform, and from the inhalation of carbonic acid and of coal gas, had been restored to life; and recently Pernice had applied the same means successfully to new-born children, who could not be made to breathe in the ordinary way. One of the convenient galvanic batteries now made by Stöhrer and others should always be at hand when chloroform was being administered, or at places where deaths by drowning were liable to occur.

A Fellow suggested that Dr. Bain's plan might be used in the prone position, which would facilitate the escape of water.

Mr. Jones said that several years' experience as house-surgeon at St. George's Hospital led him to prefer the method of artificial respiration by intermittent pressure upon the parietes of the chest and abdomen. The difficulties of the Marshall Hall method were very great, especially with heavy or bulky patients. He related the case of a new-born child apparently dead, and tied up in a parcel with a ligature round its neck, but that eventually recovered, to illustrate the importance of perseverance in efforts to restore suspended animation. —*Lancet, Dec.* 19, 1868, *p.* 799.

113.—CASES OF PLUMBISM.

By Dr. Edward Clapton, Assistant Physician to St. Thomas' Hospital.

[Some of the worst and most distinctive cases of lead poisoning occur in persons who handle lead in the metallic state, or who

absorb it in some other form than the carbonate. In cases arising from handling lead the symptoms are generally those of arthralgia and hyperæsthesia of various parts, and sometimes of palsy of the extensors of the wrists, but seldom acute colic.]

The following are a few of the cases (very briefly described) which have recently occurred at St. Thomas's Hospital:—

J. W., aged 39, an engine fitter, had been for a month or two engaged in fitting pipes by means of white lead. Symptoms were tympanitic abdomen, tenesmus, a white furred tongue, a slow small pulse, and a blue line along the gums. Had similar attacks twice previously from the same cause. Was ordered magnesiæ sulphatis ℥ij., acidi sulphurici diluti ℳx., tincturæ hyoscyami ℳxx., aquæ menthæ piperitæ ℥j., ter die. Was soon well.

J. T., aged 33. Had been a leather-dresser until ten months ago, when he was employed in extensive white-lead works. Symptoms were nausea, constipation, enterodynia, neuralgic pains, especially in lumbar region, a brownish white fur on tongue, a small quick pulse, and a very distinct blue line, especially on the upper teeth, which were greatly decayed. Ordered hydrargyri subchloridi gr. ij., opii gr. ss. horâ somni. Magnesiæ sulphatis ℥ij., acidi sulphurici diluti ℳxv., ex aquâ menthæ piperitæ ter die. Was very ill for some days, and only slowly recovered under quinine and iron treatment.

C. D., aged 32, a painter. Suffering from a combination of plumbic neuralgia and gonorrhœal rheumatism. Had for a long time aching pains in various parts, and recently contracted gonorrhœa. Has now slight gleet and intensely acute pains in the joints. Deep blue line on gums. Ordered potassii iodidi gr. iij., liquoris potassæ ℳxx., pulveris cubebæ ℈j., mucilaginis acaciæ ℥ij,, ex aquâ ter die. Pulveris ipecacuanhæ compositi gr. v. omni nocte. Required no alteration of treatment, and was well in three weeks.

J. S., aged 43, a man cook. Suffering from a severe attack of icterus of a week's duration. Employed in an underground kitchen of a London railway terminus, where there are a number of leaden pipes conveying steam. Had suffered severe tormina and constipation for several days before being jaundiced. A deep blue line on the gums. There was no other way of accounting for the introduction of lead into the system except by the steam escaping through several holes in the leaden pipes. Ordered pilulæ hydrargyri gr. v., extracti hyoscyami gr. v. statim. Haustûs sennæ compositi ℥ij., post horas quatuor. Magnesiæ sulphatis ℥j., sodæ bicarbonatis gr. x., ex aquâ menthæ piperitæ ter die. A hot bath. For several days the griping pains increased, and the jaundice did not lose its intensity. On the

following week was ordered hydrargyri subchloridi gr. ij. alterâ nocte. Magnesiæ sulphatis ℥j., infusi rosæ acidi ℥j., ter die. After this he rapidly recovered.

A short time ago two other cases of a similar character attended as out-patients—viz., cooks employed in a kitchen at another London terminus, both of whom had dropped wrists, general debility, and an ictero-plumbic appearance. They both stated that they were obliged to inhale steam all day which escaped from leaden pipes.

J. K, aged 49, a labourer. Suffering from acute colica pictonum of five days' duration; the third attack. His occupation entirely consisted in making leaden pipes, and involved constant standing over molten lead. The present attack was preceded for two days by vertigo, languor, anorexia, and slight alvine flux. Acute constipation, attended with great pain, then set in. Blue line very distinct. Ordered magnesiæ sulphatis ℥ijss., infusi rosæ acidi ℥jss., ter die. Pilulæ hydrargyri gr. v., pilulæ rhei compositæ gr. v., alterâ nocte. For several days he became much worse, and recovered very slowly under the influence of sulphates and tonics.

G. H., aged 29, a painter. Suffering from epileptic fits, occurring about once in a fortnight, severe in character, and of three years' duration. A distinct blue line on the gums. Ordered zinci sulphatis gr. ij., ferri sulphatis gr. ij., magnesiæ sulphatis ℥ss., ex aquâ menthæ piperitæ ter die. Subsequently the sulphate of zinc was increased by degrees to twenty-four grains for a dose. The sulphate of magnesia was reduced to fifteen grains, and then omitted. There had not been a single fit whilst under treatment—a period of five months—and the blue line almost entirely disappeared.

W. D., aged 32, a painter. Had for some time laboured under frequent attacks of cephalalgia and vertigo, and twice from epilepsy. Had several attacks of colic during the last ten years. Is very feeble, and has an exceedingly plumbo-cachectic appearance. Ordered potassii iodidi gr. vj., syrupi ferri iodidi ℥j., infusi calumbæ ℥jss. ter die. Improved rapidly in all respects, and will probably be soon well.

A case of insanity, of two years' standing, in a painter, came under my notice the early part of this year, and was similarly treated. He was well, and able to resume his ordinary duties in three months. He had never suffered from obvious lead disease, but a blue line denoted the existence of lead in the system.

In considering the treatment of cases of lead-poisoning, we are naturally led to reflect on the exact *modus operandi* of their chief remedies—the sulphates and iodides. In the one case we are supposed to render the lead more or less inert by inducing

its most insoluble form, and in the other to eliminate it after having first rendered it as soluble as possible. It is not, however, as a simple iodide that the lead is thus rendered soluble, for we know that the iodide of lead is an insoluble salt, but as a double salt—probably the iodide of lead and potassium, which is very soluble. The actual condition in which lead exists in the system after absorption is not easy to determine. As regards the inhalation of the particles of carbonate of lead, any organic acid will set free the carbonic acid, and form a soluble salt, which is taken into the circulation, or perhaps the carbonate is rendered soluble in the lungs by excess of carbonic acid. When the metal is constantly in contact with any portion of the skin, especially if there be any degree of friction, as we find in plumbers, compositors, &c., it is either absorbed in a molecular state or becomes acted upon by some organic acid, or it may be absorbed through an abraded surface. It was probably by the action of some organic acid that the piece of leaden bullet in the cheek in the case already alluded to was acted upon, and thus induced so intense an attack of lead-poisoning, the bullet not having become regularly encysted as generally happens. There was no other way of accounting for the introduction of lead into his system. Cases have been recorded in which colic was produced by leaden bullets having been swallowed. The fact is that lead has a greater affinity for animal matter, as well as a stronger tendency to combine with organic acids, than perhaps any other metal has. Witness the way in which various animal tissues, colouring matters, neutral matters, and organic matters generally are so readily thrown down by subacetate of lead. Thus it is, no doubt, that the blood deterioration is induced. The action of the lead on the various principles in the blood day by day exerts this influence, until at last the true saturnine cachexia is developed; and as soon as this has reached the utmost limit of which it is capable, the lead begins to be deposited in various solid tissues, as the brain, liver, muscles, and skin, either in the form of suboxide or of the metal itself in a molecular state. When redissolved, and again circulating in the system, as by the action of iodides, it is by the intestinal canal and by the skin, the latter especially, that the effort of elimination is exerted; but still the lead cannot attain any form which can be completely exhaled by the skin, and so is deposited in its tissue. We know that sulphureous baths will cause the surface of the body to be discoloured in the most marked manner, and this doubtless is the reason. Not long ago I tried the effect of the sulphureous bath in two cases of chronic plumbism of a severe character, the one having been treated with iodide of potassium, the other with tonic and purgative sulphates. In the former instance, the skin was here and there decidedly

blackened, in the latter not appreciably so. In the former, the lead was no doubt freed from various internal organs by being rendered more soluble and directed to the skin; in the latter, fixed in a still more insoluble form. Very much has still to be learnt in respect of these points, but unfortunately the means of investigation are limited. The great requirement of the day is a right knowledge of the chemistry of the living fluids, both in health and in disease, and also of the chemical changes which the various medicinal substances undergo in the living organism. I hope that the new Clinical Society will give an important impetus to investigations of this nature. As to the blue line on the gums in plumbism, I have seldom found it absent except in those who have lost their teeth. It is often continued along the teeth for some distance, and much more distinctly so in the case of decayed teeth. It has a very different appearance from discolorations from other causes. In several oil- and colour-men I have noticed a deep mahogany-coloured stain on the gums and teeth. In a recent communication I have shown that those who suffer from the poisonous effects of copper have a very distinct green stain on the teeth, and this has subsequently been amply verified by the attention of several others being directed to this point and by my examination of many other workmen in connexion with copper and brass works. I find that the powder which the artificial flower makers use, and which produced symptoms of copper-poisoning, with a deep green stain, in a case which I described, is emerald green or the aceto-arsenite of copper. The diagnosis of paralysis from lead poison is always easy. In nearly all cases the history readily elucidates the cause, and there is the blue line on the gums; but the chief distinction is that in all other forms of paralysis there is more or less anæsthesia as well as loss of motive power; but in that from lead there is always more or less hyperæsthesia. I have at the present time under my care an out-patient suffering from dropped wrists, having precisely the appearance as though of plumbic origin, but in reality induced by a violent blow on the back of the neck. He has considerable loss of sensation in his arms, as well as loss of motion. With respect to the treatment of chronic cases, then, the great object is to get the lead out of the system. Nervine tonics, galvanism, chalybeates, and blood restorers are all useless unless some mode of elimination has been previously or is simultaneously effected. Iodides, purgatives, and sulphureous baths are the most reliable, though the latter are difficult of application. Some cases of dropped wrists are exceedingly obstinate, but galvanism, iodide of iron, and purgatives seldom fail in effecting a cure. I do not at all approve of the plan of placing the arms and hands in splints for the whole day, as is the fashion, as I am convinced

that frequent friction and gentle exercise of the muscles of the arm form a most important element in treatment. As to acute lead colic, which consists in paralysis of the muscular fibres of the intestine with acute irritation of the sensory nerves, there can be no doubt the sulphates, anodynes, and purgatives are the right remedies. The sulphates are obviously for the purpose of diminishing the solubility of the lead, and this, we know, is equal to diminishing its poisonous influence. Such purgatives should be given as castor oil, which as an oil may also assist in combining with the lead in a form the more easily eliminated, or as those which increase alvine secretions—*e.g.*, mercury, salines, &c., the abdominal pain being greatly increased by such purgatives as act only on the muscular coat—*e.g.*, colocynth, aloes, senna, &c. Patients may be thus cured of colic, but not of plumbism, as long as the lead remains. To rid this, iodides, purgatives, tonics, and baths must be persevered with for some time. Sulphates, therefore, are more appropriate for the treatment of acute cases, and iodides for chronic. I have seen more than one case in which iodide of potassium, given for lead palsy, had to be omitted for a time in consequence of inducing acute enterodynia almost amounting to colic, in the same way as this drug has so often caused salivation in patients who have previously been mercurialised.—*Medical Times and Gazette Nov.* 28, 1868, *p.* 611.

114.—CASE OF LIPOMA NASI.

Under the care of J. W. Hulke, Esq., at the Middlesex Hospital.

Nowadays we do not often see the large, overgrown, knobby, purple noses which were formerly not uncommon. We owe this, perhaps, to our less intemperate habits. The cuticle in lipoma nasi is thin, and the cutis vera, with the underlying cellular tissue and the sebaceous follicles, is hypertrophied. When the lipoma has reached such dimensions as to greatly disfigure the personal appearance, the only applicable treatment consists in shaving down the overgrowth with the knife. The bleeding, although free, is usually soon checked, and the wound cicatrises quickly and well.

To Mr. Norton, house-surgeon, we are indebted for the particulars relating to this case.

A coachman, aged 49, was admitted into Pepy's ward on May 5th, 1868, with an enlargement and redness of the tip and sides of his nose, with dilatation of the orifices of the sebaceous follicles, which disfigured him so much that no one would engage him.

The lipoma was shaved down by repeated slices till the fibro-cartilage could be seen. The bleeding was soon arrested by pressure and ice, and the wound was dressed with unguentum simplex.

The patient left the hospital on the 1st of June, with a smooth even scar, and his personal appearance greatly improved. —*Lancet, March* 13, 1869, *p.* 361.

115.—AN ANTIDOTE TO SNAKE-POISON.

[The subject of poisonous snake bites has recently occupied a large amount of attention in Australia, owing to Professor Halford having employed his remedy—a solution of ammonia injected into the veins—with success in the case of a man exhibiting all the symptoms of snake-poisoning in an excessive degree.]

A man was bitten by a venomous snake, which he had taken into his hands, supposing it to be dead. Not long afterwards he became drowsy, and mentioned the occurrence to one of his mates. The latter immediately set about procuring medical assistance, but by the time it arrived the man was comatose, and his lower extremities paralysed. Galvanism and other usual remedies were applied, but without effect. In this extremity the medical man first called in caused Dr. Halford to be telegraphed for. The case was the first opportunity he had had of applying his new treatment to a human being, and he at first felt some hesitation in resorting to it. An incision, however, was made through the skin, exposing the superficial radial vein, and the point of the syringe being introduced into the vein, the injection (of ammonia) was completed. The beneficial effect was immediate. From an almost pulseless state, and from a stupor verging on death, the patient speedily became conscious. He has been steadily recovering since, and he is now reported to be nearly well. Whether the earlier treatment in any way contributed to the cure cannot, perhaps, be certainly known, but there appears to be little doubt—the medical men entertain none—that the case must have ended fatally but for Professor Halford's treatment. We require, of course, some further cases before the merit of the discovery can be determined. Ammonia is not a new remedy for snake bites, but Dr. Halford has the credit unquestionably of having applied it in a direct way by injection into the blood, so that its effects should be immediate and general. Its application in this way could only be safe in skilled hands. The discovery was not fortuitous, but resulted from a consideration of the microscopical alterations which he found taking place in the bloodvessels of animals subjected to the snake-poison. It is only right to add

however, that the observations of Dr. Fayrer and others have failed to verify the statements made by Dr. Halford on the altered condition of the blood-corpuscles. We learn from a letter which Dr. Halford addressed to the Melbourne Argus, that he had previously instituted a series of experiments on the lower animals, and he publishes five of them which he performed on dogs. In four instances the treatment was successful. To carry out the treatment a solution of ammonia—of the strength of one part of strongest liquor ammoniæ to two parts of distilled water—and an ordinary hypodermic syringe are required. The ammonia is thrown directly, but gradually, into the blood by puncturing any superficial vein, and may be repeated as its beneficial operation ceases.—*Lancet, Jan.* 30, 1869, *p.* 168.

116.—ON THE ACTION OF ARSENIC ON THE HUMAN SYSTEM, ESPECIALLY IN REFERENCE TO ITS USE IN DISEASES OF THE SKIN.

By Thomas Hunt, Esq., Surgeon to the Western Dispensary for Diseases of the Skin.

We now proceed to inquire *how* is arsenic to be used in order that it may with safety, and almost with certainty, accomplish the absolute and permanent cure of those diseases of the skin to which it is adapted; namely, all chronic diseases of the skin which are neither contagious nor specific, neither strumous nor cancerous. These exceptions do not amount altogether to more than a seventh part of the number of the whole group, the syphilitic cases amounting alone to about an eighth of the whole. Arsenic, therefore, if rightly used, is adapted to the treatment of six out of every seven cases of chronic skin disease which we are asked to relieve. More than this, it may be said with perfect truth, that the diseases which are curable by arsenic are absolutely incurable without it, try what you will. The converse of this proposition is equally true, namely in the excepted cases (one in seven) arsenic is utterly useless, administer it how you will. Here, then, we have a remedy for at least one half of the diseases to which man is subject, and which, if he live to his eightieth year, may cling to him and torment him almost from the cradle to the grave. We have repeatedly seen patients who have suffered from squamous disease for fifty years together without one single day's exemption. A fit of gout or stone is as nothing to this. But if skin disease, when severe and protracted, is about the most tormenting affliction which a man can have to endure, so, happily, these diseases, however severe or protracted, may with more certainty be cured by arsenic than any other disease by any other drug. Nay, there is nothing so certain in medicine as the healing power of the salts of this

metal. The inquiry before us, therefore, is not an idle question. Its solution concerns many thousands of our suffering fellow-creatures, who are shut out of society all their lives, and are often willing to confess that they have thought seriously of suicide, and have long prayed for death.

To return to the question, then :—How is arsenic to be used?

In order to simplify the inquiry, we will suppose the preparation to be Fowler's solution, this being the most commonly in use with the profession. There is an objection to this preparation which will be considered presently. But it is an objection of little weight; and we proceed to inquire how it is to be used. *First*, it should be given in divided doses—three doses in twenty-four hours, simply to avoid an unnecessarily large dose. *Second*, it should be diluted with pure water, or if the case require the influence of antimony, the vinum antimonii, say thirty-five minims, may be combined with five minims of the liquor arsenicalis, and this may be taken diluted three times a day. *Third*, this dose should be taken with, or immediately *after*, a meal, in order, that being mixed with the patient's food, it may find a ready entrance into the blood, and that the bare possibility of its irritating the mucous membrane of the stomach or bowels may be avoided. Not that there is any danger of mischief, but the patient, aware that he is taking arsenic, may thus be disabused of all fanciful or imaginary suffering of this kind. *Fourth*, it should be clearly understood that arsenic acts very slowly, and therefore it is best to begin with an average dose, say five minims of Fowler's solution, and this should be increased, not day by day, as was the practice thirty years ago, but two, three, or four weeks should be allowed to elapse before any necessity can exist for augmenting the dose. If, during this time, there should be set up an active or severe inflammation of the tunica conjunctiva in *both* eyes, the lower eyelid being swollen and showing on its lining membrane a horizontal streak of inflammation, then the medicine is not to be abandoned in a panic, but the dose may be reduced to four minims, and in a week or ten days the conjunctiva will be less inflamed; or, if not, a lotion of the liquor plumbi acetatis dilutus, or of cold black tea, will generally suffice to relieve the investments of the globe of the eye, and even to remove the slight degree of ecchymosis which is sometimes seen in the sklerotic tunic. But during this week, if the patient has been properly prepared for the course, the disease of the skin will show some amendment; it will be shorn of its strength, and from this time the cure will be easy enough, although it may take many weeks, or even months, to effect it entirely. If it should be requisite that the course be continued for several months, the soles of the feet, and less frequently the palms of the hands, become more or less

inflamed or rough, and very rarely slight vesications occur on the feet. These inconveniences must be borne patiently: they will only exist during the course. Sometimes, also, after a protracted course, the skin of those parts of the body which are covered by the dress assume a dirt-brown, unwashed appearance, and under a lens present fine scales. This also is an ephemeral appearance, somewhat annoying to females of delicate complexion, but not for a moment to be compared with the afflictive form of disease which requires arsenical treatment. Other symptoms are sometimes complained of; such as restless nights, hiccough, pains in the stomach and bowels, depression of spirits, and general nervousness. But all these, except the first, are mere mental impressions. They seldom or never occur in dispensary practice, when the patient knows nothing of the medicine he is taking. And, on the other hand, it is far more common for the patient to feel better and stronger under the course. The feet and legs become warmer in those cases in which the extremities are habitually cold; and nothing is more common than for patients to say, after a long course of this medicine, that *they have never felt so well in their lives.*

Hitherto we have supposed that the dose has been rather in excess. But it often happens that the reverse is the case, and that after a month's treatment the medicine shows no sign, and the disease remains *in statu quo.* It will now be necessary to increase the dose slightly, and perhaps repeatedly, not every day or every week, but about once in a month, nothing doubting that the effects will sooner or later appear.

Meanwhile it must not be forgotten that we are not dealing with a mere *machine.* The health of the patient must be closely watched, and the secretions carefully sustained. Above all, the bowels must not be allowed to act sluggishly. In many cases a full dose of calomel and compound colocynth pill will be required two or three times a week; and these doses are sometimes essential to the cure. If the legs, or feet, or abdomen become puffy or œdematous, the urine being scant and turbid, the case will not go on well until we have roused the kidneys to vigorous action by full doses of spiritus ætheris nitrici and acetate of potash, largely diluted with water, and accompanied with draughts of some aqueous fluid several times a day. This treatment is seldom required, but when it *is* necessary it must be adopted, or the case will become unmanageable.

In other cases there will be present an atonic diathesis, with pale upper lip or amenorrhœa. Here we must combine iron with the arsenic, taking care that our chemistry is not at fault. We may mix the vinum ferri with Fowler's solution, or the tinct. ferri sesquichloridi may be combined with the liquor

arsenici chloridi, taking care that the National Pharmacopœia does not lead us into error, of which there is no small danger.

It is never necessary, and rarely expedient, to exhibit triple compounds of arsenic, such as Donovan's solution, a very active but most unmanageable preparation. Neither mercury nor iodine should ever be given in combination with arsenic. Each of these three energetic and useful medicines has its value. Each acts in a different way, a way of its own, and each has its own peculiar power over disease. But mix them, and this distinctive power is buried, not blended. According to the constitution of the patient, one or another of these remedies has the upper hand, and you have no means of ascertaining if each or either is defective or excessive in the dose, nor could you alter it if you had.—*Journal of Cutaneous Medicine, Jan.* 1869, *p.* 350.

117.—AN ADAPTATION OF THE REFLECTING MIRROR TO THE UTERINE SPECULUM.

By Dr. Leonard W. Sedgwick, London.

To see better is so frequently to know more that I do not hesitate to submit to the consideration of the profession an adaptation of the reflecting mirror to the uterine speculum, which for some time back I have found most useful.

The mirror is three inches and a half in diameter, and is of five inches' focal length. Like the laryngoscope mirror, it is mounted in a light metallic back, and to its circumference a brass arm is attached by a ball-and-socket joint, which is easily tightened or slackened by a screw movement. The arm can be lengthened or shortened by a simple telescopic slide ; it is bent at a somewhat obtuse angle close to the joint, and is, when closed, four inches long. At its other extremity the arm is also bent at an angle, and is square ; it fits into either side of a short socket attached to the upper surface of the outer end of the speculum, and is speedily secured there by a turn or two of a screw-cap.

By this means the mirror has a firm, easily fixed attachment to the speculum ; and by the aid of the ball-and-socket joint and the telescopic movement it can be placed at any angle in relation to the axis of the speculum, and at such a distance from it as may be most convenient, or may afford the best illumination.

The mirror may, of course, be adapted to any speculum. It has been made for me, with their usual success, by Messrs. Weiss and Son ; and I have latterly used it attached to a speculum of their construction, which, I venture to think, is the most satisfactory instrument yet made.

The form of the speculum originated, I believe, in a suggestion of Sir James Simpson. The lower blade is of the duck-bill shape; the upper is flat, and fits on to the lower in such a manner that a small interval is left between the two, so that in closing the instrument for withdrawal no pinching of the vaginal mucous membrane can occur. The upper blade is shorter than the lower one, so that when the speculum is opened the cervix is easily received into it. The duck-bill shape of the speculum secures the very easy introduction of the instrument, and also so distends the vaginal walls as to prevent their falling in and obscuring the view of the os uteri. By this configuration the wooden plug is rendered unnecessary, and lateral blades are made useless: both very desirable arrangements; for, by the consequent simplicity of construction, thorough cleansing of the instrument is facilitated, and no absorbing surfaces or tortuous chinks are left where infecting particles may lurk or be overlooked. The dilating mechanism is Messrs. Weiss's improvement of that of Custo.

By the use of the mirror thus affixed, it becomes unnecessary to alter the position of the couch or bed on which the patient is lying; for, wherever the source of light may be, the mirror can be so adjusted as to reflect it upon the cervix uteri.

There are no formidable preparations to be made; for the patient may lie in the usual obstetric position on the bed wherever it may be placed.

A better illumination is obtained by daylight, inasmuch as a larger amount of light-rays are concentrated on the spot to be examined than can be obtained by direct transmission. A better illumination is also obtained when artificial light is used; for not only does the same reflection of light occur as in daylight, but the part is relatively as well as positively brighter; for, as the lamp or candle may be placed on a table at some distance away, the great disadvantage of looking over or through a bright light at a place not so bright is avoided.

The impossibility of the occurrence of such unpleasantnesses as the dropping of grease or the singeing of bed-clothes is an additional recommendation.

In all cases one hand of the medical man is entirely set at liberty, and in many instances both are free. Where the speculum does not of itself retain its position, and both hands are needed, the finger of an assistant or of the patient herself serves to secure its steadiness.

If the mirror be on a lower level than the source of light — and this may always be managed — it does not interfere with the use of both eyes; and as it is always set at an angle, it is never in the way of any instrument which may be in use. One can thus accomplish with greater certainty many necessary

mechanical interferences with the os uteri, because both hands are at liberty, and one has a clear and continuous view of all that is going on, especially if the instruments used are, as they may often be, trowel-handled.

I may add that this mirror may be used attached to the rectum speculum with advantage.—*Lancet, April* 24, 1869, *p.* 561.

118.—REMARKS ON RHEUMATIC FEVER.

By Alfred Fleischmann, Esq., late Physician-Accoucheur-Assistant to King's College Hospital.

Since I entered the profession I have had thirty-four cases of acute rheumatic fever under my care. In each case I have depended upon (1) alkalies, (2) opiates, (3) blisters, (4) flannel envelopes; and with those four remedies, the rest of the drug-list may be burnt. Had I to treat as many thousands as I have had units, I should seek no further for means of cure. After careful comparative watching, I find the acetate and nitrate of potash is the best conjunction of alkalies. I give a maximum dose of half an ounce of the former and half a drachm of the latter in a claret-glass of dill water every two hours, until vomiting or nausea is produced, or, failing that, until the sweat ceases to redden litmus. In some cases it is astonishing the weight of alkaline antidote that is required to neutralise the acid poison. In one case my patient took two pounds of the acetate and a corresponding amount of the nitrate before he had had enough. If these doses are exhibited and borne, the pain is, as a rule, mitigated in twelve hours. I do not feel sure whether it is better in all cases to give or withhold opium; I think it should depend upon the amount of pain, rather than the amount of disease. The complete envelopment in flannel and wadding is a valuable aid, for which we should never forget to thank that admirable physician, Dr. Chambers, of St. Mary's Hospital. Blisters should be a later resort, with the exception of one, half the size of a playing card, an inch and a half below the left clavicle—an application I look upon as an almost certain preventive of cardiac mischief. In all my cases I have had only *one* instance of *original* heart complication, and that was a case rather of carditis than of rheumatic fever (the patient was well and dead in thirty-six hours.)

Of course all this has been written a hundred times: I rewrite it, not as a novelty, but simply recording its adoption and success in my hands. I would make, however, one or two remarks which I do not remember to have seen in print. When a patient has once had an attack, he should, if an intelligent person, be prepared for his own subsequent behaviour in any

future attack. He should be armed with his alkalies, and not lose an hour in commencing the treatment before the doctor comes; and if sufficient promptitude be used, the disease will be strangled in its birth. I have had some striking instances of this in my own practice. I had a valued servant who had some severe attacks before I knew her. She complained one morning to her mistress that she felt premonitory symptoms. I at once sent her to bed and put her upon routine treatment. She had every symptom of the fully developed disease except the joint-swelling and pain. Her perspiration was so acid that, although the ventilation was right, it was perceptible to the nose a flight of stairs from her room. In three days she was about her work again. I make it a rule to give into my patients' hands the alkaline prescription, and impress upon them the importance of commencing with it immediately they recognise the symptoms. In three or four other cases I know the disease has thus been nipped in the bud, and severe illnesses averted. I firmly believe the key to the puzzle why in some hands alkalies fail is, that the doses are too small and time is lost. Small doses are useless. This large amount of alkali does, I think, tend to blood impairment; but full doses of the ammonio-citrate of iron soon restore the red particles. The ammonio-citrate is, in most cases (where astringency is not wanted), the best iron-salt we have.

I rarely, if ever, prescribe any other form of blister except the liquid preparation. It has every advantage over other forms: notably, it *never* fails to rise over the exact area you desire. Early blisters control joint mischief, but under full alkaline treatment they are not wanted; and it should be remembered that the amount of pain a blister gives—*ab initio usque ad finem*—is not insignificant, and where movement is already synonymous with agony they needlessly add to it.

Another remark I desire to make, and that is—the relapse, which is a specific feature, and a very ugly one, in this disease, is often in defiance of all the care that may be taken. Does full alkaline treatment predispose to this? I cannot say; but this I know, that in relapse the alkaline treatment is of greatly diminished value. The helm is either answered very much more slowly or not at all. I have now such a case under my care; and I find that the immediate application of a band of liquid blister, about the size of a French (green) bean, two inches above the joint, is then of great value. Directly the the patient feels the least joint pain, he himself paints on the blister. In such cases there is generally a much lower and more chronic inflammatory action, and the liquid blister, with iron and iodide of potassium, gives slow but satisfactory results.—*Lancet, May* 1, 1869, *p.* 598.

119.—CASE OF TETANUS TREATED BY BROMIDE OF POTASSIUM.

By Robert Brown, Esq., Carlisle.

[The patient was a boy 12 years of age. About the end of September suppuration commenced around the root of the thumb nail, and terminated in the death and removal of the nail. On October 4 he fell asleep on the grass, and awoke stiff and chilly. There was slight stiffness of the neck next day, and on October 8 there was rigidity of the spine and stiffness of the jaws.]

When admitted, two men carried him, perfectly rigid and bent, by the shoulders and lower extremities, from the cab to the ward.

State on admission.—He complains of stiffness in the back, neck, and jaws; of pain in the neck, especially along the course of the sterno-mastoid muscles, and of great thirst. The sterno-mastoids, together with the muscles of the back and abdominal recti, are very tense. He can move his jaws apart about $\frac{1}{4}$ of an inch. During a paroxysm of pain and spasm, one of which occurred shortly after admission, he cried loudly, rested on his occiput and heels, and his countenance distinctly presented the "risus sardonicus." Pulse 112, irregular. Skin hot and dry. Bowels inactive. Ordered injection of warm water. To have milk, beef-tea, arrow-root. Potass. bromid. gr. xx. every second hour.

13th October, vesp. Last night the bowels were freely moved; he slept little, but was quiet and easy. Has taken liquid nourishment freely. Paroxysms have been frequent and painful during the night; to-day they have occurred very often since 5 p.m. The boy perspires freely; can move his jaws apart fully $\frac{1}{4}$ of an inch. Pulse irregular, and so feeble that the beats cannot be accurately counted. Urine normal in quantity and quality. Potass. bromid. gr. xx. every hour.

15th, vesp. Patient during the early part of last two nights has suffered from severe paroxysms, occurring on an average four in the hour, and accompanied with a sense of choking, but after 1. a.m. he has become easier, and has slept a good deal. Since 5 p.m. to-day, paroxysms have occurred on an average 3 to 6 during the hour, though before that time he had been free from them, and had slept for three hours, being awakened however, to take his medicine, &c. Pulse 78, stronger, but still irregular. He perspires freely. Bowels acted after an injection for first time since night of admission.

16th. Patient slept well during the night till 3 a.m., when a paroxysm seized him, and almost threw him out of bed—such was its severity; it caused intense pain, and a wound of the

tongue, by the sudden snapping together of his jaws. This morning he has taken milk and arrowroot for breakfast; lies quite easy, and perfectly free from pain, often dozing in sleep, with his mouth open fully an inch. He had to-day fifteen paroxysms in twelve hours. Tongue thickly coated with white fur. Breath fœtid. Bowels inactive.

17th. Last night at 1.30 a.m., the house-surgeon was summoned by the nurse, and found the boy convulsed in a violent paroxysm. His arms were violently contracted, the sardonic grin well marked; opisthotonos extreme; breathing hurried and laboured; blood and saliva streaming from the mouth; tongue bitten in two places; face livid. The paroxysm lasted for three minutes, and subsequently he lay for half-an-hour exhausted and prostrate. This morning he is easy, and sleeps hour after hour. Ordered injection. Hydrarg. subchlor., gr. ii.; pulv. rhei, gr. vi. M. et. ft. pulv.

18th. Patient had two violent and a few slight paroxysms during the night. Bowels acted twice. Pulse 84—89, weak. Ordered sherry ℥ss. every fourth hour.

Vesp. During the day has had twenty-four paroxysms in twelve hours.

21st. Patient has passed easy nights, and slept well since last report. Yesterday he slept nearly the whole day, being awakened every hour to take medicine. During the night there occurred fifteen paroxysms in four hours. To-day he thinks the stiffness in the neck is disappearing. Potass. brom. every second hour. Sherry ℥x. daily.

24th, vesp. The boy has progressed rapidly and favourably since the 21st. Has slept a great deal, and perspired freely, odour of sweat being fœtid. To-day he has been restless, and has suffered from three paroxysms in six hours, though he was free from them in the morning. Pulse 86, regular. Ordered an injection of warm water, which brought away a large, dark, fœtid stool.

26th. Progress very satisfactory till 3 a.m. (this morning), when he became restless, and suffered from paroxysms frequently, on an average three an hour. This morning he looks haggard, and, during the spasmodic attacks, the sardonic grin, the opisthotonos, with the clenching of the jaws, and contractions of the arms, and pain in the neck are as well marked as on the 18th and 19th, when he took the paroxysms most frequently. Pulse feeble and irregular. Ordered whisky, ℥ii. ℞. Potass. bromid. gr. xx. every hour. Ordered sherry, ℥vi.

27th. Has become much easier, suffers less pain during a spasm, and sleeps hour after hour, save when he has to take his stimulants, fluid nutriment, or medicine which he does with avidity.

2 p.m. The house-surgeon was summoned by the boy's screams, and found him almost out of bed in a violent paroxysm—the nurse had left the ward for a moment. Ordered an enema.

1st November. Since the last paroxysm recorded, the boy has only had four, which occurred on the 29th. Improvement rapid. He sleeps well, and eats voraciously. Pulse 96, weak.

Vesp. To-day he has had three paroxysms, one of which took place after an ineffectual attempt to sit up in bed.

6th. Has had no paroxysm since last report, when he began to take the bromide every second hour. Pulse 90. Improves daily. He still wears a facial grin, and complains of pain along the course of the sterno-mastoids, especially when he moves his head. Bowels acted freely. ℞. Potass. brom. gr. xx. every third hour.

10th. The boy improves rapidly, and without relapse. For the last two days he has been out of bed, and sitting on a chair; if he attempts to walk, he stumps along on his heels. Has still a broad grin and stiffness in back and legs. His articulation is imperfect, owing to the rigid muscles. To discontinue whisky. Diet common; eggs ii. Sherry ℥vi. ℞. Potass. bromid. gr. xx. ter in die.

25th. In a very satisfactory state.

2nd December. Discharged cured.—*Edinburgh Med. Journal*, *May* 1869, *p.* 993.

120.—CASE OF TRAUMATIC TETANUS: RECOVERY UNDER THE USE OF THE CALABAR BEAN.

By Dr. Alexander J. Macarthur, Anstruther.

[The patient was a man aged 24, whose symptoms seemed to be excited by exposure to cold following the receipt of a punctured wound in the hand.]

On visiting him I found, on examination, that he had increased pain along the margins of the ribs, and also a feeling of stiffness in the neck and jaws, which I recognised as being the commencement of tetanus, and feared that he would fall a victim to that disease. He was ordered to bed, and to have one-eighth of a grain of the extract of Calabar bean; but as the druggist here had none of it—owing, as he said, to its being a remedy never inquired for—two days elapsed before it could be obtained from Edinburgh. In the meantime, I prescribed 8 grains of the ext. of conium every two hours, which dose, as it had no apparent effect, was doubled on the following day; and he was also ordered hydrarg. subchlorid. ii. grs., pulv. jalap xx. grs., which acted freely on the bowels. On the 4th of January,

the day the Calabar bean arrived, the symptoms of tetanus were fully developed, and his condition was a very painful one. The appearance of his countenance was remarkable, from the lip being dragged into a kind of grin; his voice had a guttural sound, and it was difficult to make out what he said, as he had no power of articulation, from the lips and lower jaw being fixed. He complained of constant pain in the breast along the margin of the cartilages of the ribs, and in the back, about the lower dorsal vertebræ. There was not much arching of the back at this time; but on touching the part where he complained of pain, he was immediately thrown into a state of rigid spasm, with the back much bent backwards; this condition subsided in a few seconds. The abdominal muscles felt very tight, and he had pains in the groins and legs. His whole body was quite rigid, so that it was impossible for him to sit up in bed. He had lividity of the face, lips, and tongue, difficulty of breathing, and a short spasmodic cough, giving him great pain in the breast and back. The heart's sounds were normal; the pulse 88. His jaws were capable of being separated during the short intervals of spasm about a quarter of an inch, and he could only protrude the tip of the tongue. He begged of me to give him something to ease his breast and back, and, as he felt hungry and could not eat, he was very anxious to have something to appease his appetite. He was ordered milk, egg-flip, and arrowroot. He felt, on attempting to swallow anything, as if he would choke; for as soon as the fluid came to the pharynx a spasmodic action was set up which forced it back, and only very small quantities could be got over his throat at a time. He was now to have one-eighth of a grain of the extract of Calabar bean every hour.

6th January. Symptoms the same as at last report, with the exception that the pulse was 80, soft, and he said he felt a little easier in about a quarter of an hour after each dose of the medicine, at which times he could swallow a little better. I ordered the dose to be increased to one-sixth of a grain every hour.

7th. Complained very much of the frequent spasms, which occurred every three or four minutes, and had increased pain over the shoulders and in the legs; pulse 84, soft. To have one-fourth of a grain of extract every hour. In the evening the pulse was 120.

8th. The tongue which was loaded with a thick fur, could be protruded about a quarter of an inch; it was bitten on the edge by the teeth, owing to the sudden spasmodic closure of the jaw; the back was very much arched, and perspiration was profuse. He had great thirst, and a gurgling sound from the throat, arising out of a collection of stringy mucus, which at

times he made a half-blowing, half-sneezing effort to get rid of; pulse 100. Ordered half a grain of the extract every hour and a half. In the evening the pulse was 92; the eyes had a peculiar hazy appearance, with pupils much contracted. His mother remarked that he had spent an easier day, and that he got some short snatches of sleep now—as the spasms, although very severe when they did come, were less frequent, having an interval of ten minutes or a quarter of an hour.

9th. Had much pain in the breast and back, also great uneasiness in the stomach; pulse 116; otherwise the symptoms the same as on last report; ordered three drops of dilute hydrocyanic acid every four hours, and half a grain of the ext. of Calabar bean every two hours. In the evening he felt easier.

10th. To-day the pulse fell to 80 and was very soft; he was much troubled with mucus in his throat, which he could not easily get rid of. Stopped the hydrocyanic acid— continued the half-grain of extract every two hours. He said he felt the need of the medicine about the end of the two hours. Pupils continued always very much contracted.

11th. The pulse was up to 100; spasms very easily excited by touching his back, and he felt so sensitive that the cold air reaching him, if the door of his room were opened, was sufficient to bring on a spasm. The Calabar bean to be continued, but the dose to be doubled every alternate two hours, so that he had half a grain at one time, and a whole grain at the next.

12th. Had delirium during the past night. Pulse 120; was afraid to put out his tongue in case of biting it; the muscles of the abdomen were very tense; still complained of pain in breast, back, and legs; ordered to continue the old dose of half a grain every two hours, but to omit the double dose, as I thought the delirium might be occasioned by it; sweating was very profuse.

In the evening I was sent for very hurriedly as he was thought dying, and on my arrival at the bedside I found him quite insensible, foaming at the mouth, breathing laboured and stertorous, pulse almost imperceptible, countenance very livid, and he had all the appearance of being very near death. His mother told me that he had suffered very much more from the spasms throughout the day, and regretted much that he had not had any of the Calabar bean since I had seen him in the morning, owing to the druggist's supply having run short. Fortunately I had a small quantity in my pocket, which I kept in case of having to use it subcutaneously, and as he was quite unconscious and unable to swallow, I injected half a grain in solution under the skin. The epileptic symptoms gradually subsided, and he was again quite conscious in about half an hour. The

Calabar bean was continued as before in half-grain doses every two hours.

13th. Pulse 100; body much less rigid and spasms less severe; could protrude the tongue about half an inch, but was still afraid to do so; complained greatly of want of sleep.

17th. Since last report his symptoms have been gradually diminishing in severity, so I reduced the dose of the bean to one-fourth of a grain, and ordered a squill mixture, with camphor and dilute sulphuric acid, as he had loud mucus râles in the larger bronchi.

20th. During last night he had his first sound sleep since the commencement of his illness. Found him asleep at the time of my visit, and the muscular system quite relaxed. He awoke while I was standing at his bedside, and the back was immediately thrown into an arched position, which subsided to its natural state in a few seconds. Bean to be taken in quarter-grain doses every four hours.

22nd. Pulse is now 60, tongue clean, feels his muscles stiff and sore, but can get up out of bed; and I had the satisfaction of seeing him walk, and also chew some food; he is evidently quite convalescent. Ordered him to stop taking his medicine.

This case of traumatic tetanus was marked by gradual progression; the symptoms being very slight during the period of accession, intensely severe at its height, and then gradually declining until recovery was established. The punctured wound, followed by exposure to cold, was evidently the exciting cause, and the first question to decide was, whether any removal of that cause could be effected by surgical treatment at the seat of the original injury. Amputation in tetanus is forbidden, unless the part to be operated on is in such a condition as to require it, independently of that disease; the more promising surgical treatment is the division high up of the main trunk of the nerve leading from the seat of the injury; but with reference to such a procedure in this case, I came to the conclusion that, as the spinal cord was already in a state of super-sensitiveness to outward impressions, any operation on the nerves leading thereto would be only likely to aggravate the disease, and I therefore contented myself by applying hot fomentations to the hand and arm, and sought for the medicine which would produce the most powerful sedative effect on the spinal cord. From what has been written by Drs. Christison, T. R. Fraser, and Ebenezer Watson, regarding the properties of the Calabar bean, I was led to decide on it as being the medicine most likely to afford relief in tetanus, and the foregoing case is an illustration of its valuable sedative action on the spinal cord and medulla oblongata. The occurrence of an epileptic fit in this case, after the accidental want of the drug for some hours, at the height of the disease, is

a remarkable circumstance; and it has led me to think that the Calabar bean may yet be found serviceable in the treatment of epilepsy, in which disease, so far as I have been able to learn, it has not yet been used.

Van der Kolk, in his work on Epilepsy, states that, for the rational treatment of that disease, it is necessary, after removing as far as possible any remote cause, which by its action on the medulla oblongata keeps up the "increased capacity for morbid reflex movement and discharge of the ganglionic cells," to "diminish the excessive sensibility of the medulla oblongata, and to moderate, if needful, the superabundant determination of blood to these parts." Now the physiological action of Calabar bean fulfils these indications, and it does so better than any other drug known, by its having not only a sedative action on the medulla oblongata and spinal cord, but also a similar effect on the circulatory system, and is therefore free from the objection of producing a state of congestion, which attends the administration of the most powerful sedatives of the nervous system. Actual experience in practice will alone determine its value as a curative agent in epilepsy; but its properties would lead us to hope that good results may yet be obtained from its use in that disease.

The only other remark I have to make in connexion with this case is, that in Sir Thomas Watson's work on the Practice of Physic, it is stated that, "in tetanus, there is no thirst, and seldom any accumulation of tough and stringy mucus in the fauces and about the angles of the mouth; but that in hydrophobia both these symptoms is always present." In this case of tetanus, thirst and accumulation of stringy mucus in the fauces were present in a marked degree, and it was a frequent question made to me by the patient what he could have to drink, as his thirst was so great, and his power of swallowing so much interfered with. I suppose that the presence of these symptoms, in this case, is to be attributed to the effects of the Calabar bean.—*Edinburgh Medical Journal, May* 1869, *p.* 989.

121.—VOMITING OF PREGNANCY TREATED BY THE HYPODERMIC INJECTION OF MORPHIA.

By John Harrison, Esq., Congleton.

[The vomiting in this case was most severe and distressing. There was seldom a longer interval than fifteen minutes between the paroxysms of sickness. The stomach would retain absolutely nothing.]

On April 13th, after having tried external applications, nutritive and sedative enemata, vaginal injections, and number-

less internal medicines, it occurred to me that hypodermic injections might be of service. I began with a solution of one grain of acetate of morphia in six minims of water, and injected one minim three times daily. At once the vomiting abated, and she gradually became stronger. The dose was increased to fourteen minims, but was only given twice in the day. This treatment was continued until July 1st, with occasional intermissions of one or two injections, that other remedies might be tried; but a tendency to relapse invariably occurred. I now determined to try if miscarriage could be induced by drastic purgatives and ergot. These means appeared to succeed. A fœtus was expelled, and the patient did well; but the gastric irritation continued, necessitating the continuance of the injections. However, on July 9th, I was able to reduce their strength and the frequency of their administration; and, on the 20th, discontinued them altogether. At this date, the menses returned, and the irritation of the stomach quite subsided. The patient was sent to the seaside, and is now quite well. She was reluctant to discontinue the injections, and was for a day or two depressed and hysterical, though not usually of this habit. She is more than ordinarily fat when well. She lost much flesh during the first part of her illness, but regained it soon after the injections were commenced. Fearing to establish a habit of opium-taking, the character of the injections was hidden from the patient. The skin of the forearms was pierced two hundred and sixty times. There was never any swelling or redness, except after two or three of the earlier operations, when the injection was accidentally endermic, rather than hypodermic. Suppuration never occurred. The bowels were sometimes a little constipated; and a slight disorder of the liver's functions was easily rectified by an aperient. The effect of the morphia was felt very soon after injection, in heightened spirits, toleration of food, and increased energy; but there was no marked drowsiness, contraction of pupils, or subsequent headache.—*Brit. Med. Journal, April* 3, 1869, *p.* 306.

122.—ON THE TREATMENT OF SUPPURATING JOINTS BY FREE INCISIONS.

By Thomas Bryant, Esq., Assistant-Surgeon to Guy's Hospital.

The treatment of a disorganised or suppurating joint has ever been a source of difficulty to the surgeon, and the larger the articulation that is affected the more that difficulty has been experienced, for the suppuration of a large joint, such as the knee or hip, too often threatens life in some stage of its progress,

and the integrity of any joint, large or small, is, as a rule, compromised by suppuration.

How to preserve the natural movements of a diseased articulation is the first aim of the surgeon, and when that hope has gone his object is to save the limb. When this end can be obtained with a stiff joint, the result may usually be regarded as satisfactory, particularly in disease of the lower extremity, and even in the upper a cure by anchylosis is not so bad as some surgeons would lead us to believe. When neither of these ends appears probable, possible, or expedient, from the extent of the local disease, the general want of power of the patient, or the necessities of the individual case, the question of operation comes before the surgeon, and he has to decide whether amputation of the limb, resection of the joint, or incision into the articulation is to be performed. To work out the many points involved in the solution of these questions is a task of difficulty, and a form of practice which is applicable to one joint may be inexpedient to apply to another.

This difficulty is doubtless due to the different value which surgeons place on different forms of practice, and the estimation with which they regard natural processes. One surgeon, having intense faith in natural processes in the cure of disease, and particularly joint disease, would attempt to save a limb that another would condemn, regarding any practice as wrong that interferes with a natural recovery, as long as any reasonable hope exists of securing such a result, and believing that a cure by anchylosis, however acquired and however long a time may be passed in securing it, is worth the attempt. A second surgeon, having stronger faith in surgical treatment, would excise a joint, believing it to be inexpedient to waste time for a natural cure, even when it may be gained, when by excision he believes an equally good, if not a better, result can be secured in a shorter period; whilst a third surgeon, looking upon both forms of practice as too protracted and uncertain, would remove the diseased part by amputation, in the belief that a more certain result and a more rapid recovery would be secured by such a process.

In brief, a case of disease of a joint that one surgeon would attempt to cure with anchylosis, a second would excise, and a third amputate—the two former schools amputating a limb only when all hopes of saving it by less severe measures have been proved futile.

In the present paper it is not my intention to consider the expediency of practising excision of a joint. On a former occasion I have fairly shown that in the knee it is only justifiable in exceptional cases. In its own place the subject of excision of other joints will meet with due attention, although I may admit

at once its indisputable value in appropriate cases of disease of the shoulder, elbow, and hip-joints. I recognise the rule that amputation of a limb should only be performed when all other measures are out of question, and it is clearly a necessity to sacrifice a limb to save life. I have intense faith in the power of nature's processes to cure disease, and particularly joint disease, and believe that, in the majority of cases of joint disease, the office of the surgeon is mainly valuable in guiding natural processes in the way of cure. In the hip and knee a natural recovery with anchylosis is all that one can wish, and I believe this result to be a success such as a surgeon may look upon with satisfaction; and it is, as a rule, acquired without risk to life, and without much active surgical interference. In the shoulder, elbow, wrist, &c., it is not so bad as some surgeons would lead us to think, and it is fairly a question whether by excision in a large proportion of cases, a better result is to be acquired. These points, however, are not the subjects of my present communication, for in this I wish to demonstrate the value of a free incision into a suppurating or disorganised joint. I believe that such a practice is of great value in many cases—that by it many limbs may be saved, and as many helped on to anchylosis. I am, moreover, disposed to think that it has not been practised as freely as it deserves.

I propose on the present occasion to demonstrate the value of the practice by the quotation of such cases as my note-book affords.

But first of all let us stop to inquire briefly as to the cases in which it is expedient to apply the practice. Is it applicable to all cases of suppurating joints? If not, to which should it be applied? And these questions lead me to consider, although briefly, the pathology of joint affections, for, without pathology, practice must ever be uncertain and unscientific.

To be brief upon these points, it may fairly be asserted that there are but two tissues in which joint mischief may be said practically to commence—the osseous and the synovial—although in certain cases of injury to the hip, knee, and other joints, in which much stretching or even laceration of the ligaments has taken place, disease may occur at their bony attachments—in the hip in the teres ligament, in the knee in the crucial; but even in these it is in the synovial membrane or bone that the disease shows itself.

To this general assertion it must, however, be added that disease rarely exists long in one tissue without involving another; and that, when disorganisation of a joint has taken place, every tissue will be more or less affected, but the extent to which the different tissues will be eventually involved rests entirely upon the original seat of the disease.

When disorganisation of a joint takes place as a result of acute synovial inflammation, or from chronic synovial disease, the articular cartilages may disappear, and the articular surfaces of the bones may be exposed, yet those articular surfaces will probably be only partially involved, and the great body of the bone will still be good. The disease, as far as the bones are concerned, will be superficial, and may be thus dealt with.

When disorganisation of a joint, however, takes place as a result of bone mischief, the synovial membrane will to a certainty have undergone changes with the articular cartilages, as in the former class of cases, but the cartilages will either have entirely disappeared or have been cast off or shed into the joint, or the portions that remain will be found resting on the bone. But the chief changes will be seen in the bone itself. The articular extremities will in all probability be extensively involved. More or less complete evidence of inflammation will be manifested either by partial or complete necrosis, local or diffused suppuration, or osseous consolidation. The disease in the joint, having been secondary to the disease in the bones, may require treatment, but the original seat of the disease must be remembered, and the treatment shaped accordingly.

Consequently, in disorganisation of a joint the result of primary disease of the synovial membrane, one kind of treatment may be found of value which will be inapplicable to other cases, and disorganisation of a joint the result of disease of the osseous structures may require a form of practice very different from that required in synovial disease; a correct diagnosis in these cases (as in others) being of primary importance, and, as a guide to practice, of great value.

We will now proceed to the more immediate subject of this paper—the value of a free incision into a suppurating or disorganised joint—and will first consider in what cases the practice is most applicable.

First of all, the practice of making a free incision into a joint is only justifiable when disorganisation or suppuration has taken place. whether that suppuration be the result of a chronic disease or of an acute one following a wound of the articulation.

In acute suppuration of a joint, the result of a wound, I believe there is no better practice to be followed. A free incision into the articulation under most circumstances not only is the best local treatment, but the best general, for it seems to be true that, as soon as a free outlet for pus has been made, surgical fever, although intense, may be expected to subside, and local symptoms to pass away. The incisions, when made, should, however, be free, that the escape of pus may be complete. By this practice joints will often be saved, and movement secured.

In disorganisation of a joint, the result of chronic disease, the plan of treatment by a free incision is not, however, so simple; for its value, as already indicated, depends much upon the original seat of the disease. When the disorganisation of the joint has been secondary to disease in the articular extremity of the bone, to acute or chronic inflammation terminating in necrosis, partial or complete, it is not to be expected that a recovery is to take place by giving free exit to the suppuration in the joint, for the cause of this suppuration will remain after the adoption of the practice, and thus keep up the irritation and prevent a cure. The incision may relieve the symptoms, but will not cure the disease or do much towards hastening anchylosis. Nothing but the removal of the diseased bone, either after incision, as in an ordinary operation for necrosis, or by resection, will be of use; for the disorganisation of the joint is clearly the result of disease of the bone, and the seat of the disease must be made out before the correct treatment can be applied. An incision, as an exploratory operation, may, however, be of use in the case, for it may facilitate the removal of the diseased bone, and thus hasten recovery. When, however, the disorganisation of the joint has been the result of disease in the synovial membrane, the value of a free incision into the articulation is very great, for in these cases, although the disorganisation may be complete, the disease in the bone will probably be only superficial, and will rarely be found to extend far into the cancellated tissue. The disease in the bone is the result of synovial mischief, and will consequently recover when the source of disease has been removed and the pus has been evacuated from the joint. Indeed, it is in disease of the synovial membrane of the pulpy kind, in which suppuration has taken place, that this practice of making free incisions into the articulation is carried out with the greatest advantage, and in the following cases which I propose now to relate I trust the truth of these remarks will be demonstrated.

Case 1.—*Pulpy Disease of Ankle-joint—Recovery with good Movement after Free Incision into Joint.*—Tom W., aged 4, came under my care at Guy's Hospital on January 30th, 1865, with a disease of the ankle-joint. It was on the right side, and had existed for seven months, having come on after an injury, with pain and swelling. When seen, the joint was clearly much enlarged, the parts around the malleoli, &c., being doughy and thickened. There was pain in the part and daily flushing with heat, particularly at night. Fomentations were ordered, with tonics, and by February 20 all heat had disappeared, with all pain and indications of inflammation. The joint was consequently strapped up. The child was then, contrary to orders, allowed to use his limb, and as a consequence

a relapse took place. The symptoms became as bad as—indeed, worse than—ever, and suppuration followed, an abscess opening on the outer side of the joint on May 15. On May 19 another formed about the inner malleolus, and it was clear that the joint was thoroughly opened. A free incision was made into the joint about the inner malleolus, and its contents allowed to escape without hindrance. Water dressing was applied. From this time everything went on favourably. By June 10 the abscess and the incision over the external part of the joint had healed, and all pain had ceased. By September things looked as if they were about to consolidate. On October 5, there was another relapse, and another abscess formed, and severe joint symptoms with constitutional disturbance made their appearance—indeed, it appeared as if an abscess had burst into the joint from the breaking down of some of the pulpy disease in the synovial membrane. The symptoms, however, gradually disappeared, and by November 27 all their severity had gone. From this date everything went on favourably, suppuration ceased, and all thickening of the synovial membrane gradually disappeared. By February 19, 1866, all the abscesses had healed and the sinuses were closed, and by April the joint resumed its natural aspect, all thickening of the soft parts having subsided. Strapping was again employed to hasten the absorption of the inflammatory products, and by April 9 the case was reported as well, with what was hardly to have been expected, a movable joint. By December, 1866, the joint was quite sound, perfect movement existing, the remains of the cicatrices and some weakness of the joint alone remaining to testify to the severity and nature of the disease. On December 7, 1868, this boy called on me, and the joint was still sound and useful, no traces of disease beyond the cicatrices remaining. The astragalus moved as smoothly as possible between the malleoli. He is still well.

Case 2.—Pulpy Disease of Ankle-joint—Suppuration and Recovery—Treated by Free Incisions.—William R., aged 9, was brought to me at Guy's Hospital on July 4, 1864, with a disease of his right ankle of two years' duration. It had appeared after a blow, with pain and swelling, and at uncertain intervals these symptoms had continued ever since. When he came under observation the synovial membrane projected round the malleoli and was much thickened, and appeared in parts to be breaking down; any movement of the foot caused pain, and the astragalus did not move smoothly in its socket. A splint was applied and tonics given. For a time the symptoms improved with the child's health, and it was hoped that suppuration would not take place. In March of the following year, however, two abscesses formed, one on each side of the joint,

and it was clear by the passage of a probe that the joint was opened. A free incision was then made on each side, laying the joint open freely, and a splint was kept on. In six months the wound had healed, and the parts appeared to have become consolidated. In another three some movement in the joint appeared. In July, 1866, when last seen, the boy could walk well without pain. The movements of the joint were complete. The boy, however, required some extra support for his ankle, but had a good foot.

Case 3.—Pulpy Disease of the Left Ankle-joint—Suppuration—Recovery with a Movable Joint.—Cornelius M., aged 3 years, was brought to me at Guy's Hospital on December 14, 1865, for disease of his left ankle. It had come on after a fall, received some months previously, with pain and swelling, the joint being at times hot and painful. When first seen by me the articulation was clearly swollen from inflammatory infiltration of the synovial membrane. The whole part had a soft and pulpy feel, and the margins of bone were all covered in. There was no bulging of the synovial membrane from effusion, and the articulation moved smoothly. Fomentations with strips of wet rag were ordered to be kept on the joint, and the horizontal position was maintained; tonics were also given. By January 30 the symptoms had improved, but on February 26 they had again become severe, suppuration threatening. On March 12 an abscess was opened by a free incision in front of the inner malleolus, which was clearly connected with the joint; consequently a splint was applied. By June 25 all swelling had nearly subsided, and all heat had gone. Pressure with strapping was applied, and on September 3, six months after the incision, the child was declared to be cured, with a good and movable joint.

Case 4.—Pulpy Disease of the Synovial Membrane of the Ankle-joint—Free Incisions—Recovery with a Good Joint.—Alfred T., aged 5½, came under my care at Guy's on January 1, 1866, for disease of the right ankle-joint of three years' standing. It had appeared after a fall, and had commenced with pain and swelling. When seen, the whole ankle was much swollen, soft, and pulpy to the touch. It was hot and painful, although some movement was allowed. Fomentations were ordered, and steel wine given, with good food. The boy was directed to be kept in bed. On January 29 an abscess appeared on the inner side, which was opened by a free incision, the pus clearly coming from the joint, for it could be pressed out. Water dressing was applied. The case went on satisfactorily after this for a time, but by June 14 a second abscess appeared on the outside from the breaking up of the inflammatory effusion. This was treated

also by a free incision, and water dressing applied; at this time the inner wound had quite healed. In three months the outer incision had also cicatrised, and the swelling about the joint had disappeared. Some movement of the articulation also existed. In August, 1868, nearly two years after this date, the child was brought to me, when the movements of the ankle-joint were smooth and perfect, the only marks of the old disease being the cicatrices and the weakness of the joint.

Case 5.—*Synovitis and Disorganisation of the Ankle-Joint—Recovery with Movement—Treated by Free Incision.*—Eliza M., aged 2, was brought to me at Guy's, February 25, 1864, for disease of the right ankle. It had existed for six months, and had commenced with pain and swelling. When seen the joint was clearly much diseased, although the cartilages were apparently perfect. There was great thickening of the synovial membrane all round the malleoli and the joint, and the parts were hot. Fomentations were ordered with tonics. On March 1 all the symptoms were worse, and suppuration of the joint was threatening. On March 31 the articulation was laid open on its inner side. The whole joint having apparently broken down, a splint was applied. Much relief followed the laying open of the joint, and from that time things began to mend. On May 10 there was little discharge, and by July the wounds had healed. The splint had been kept on during this period. By July 30 the splint was removed, and on September 10 some movement in the joint was visible. In December the movements were much more perfect, and on April 10, 1865, when the mother again brought the child, I was surprised to find that the foot moved freely and smoothly between the malleoli and without pain. The joint was weak, and required some support, but it was sound.—*Med. Times and Gazette, May* 15, 1869, *p.* 514.

123.—IMPACTED FOREIGN BODIES IN THE NOSE.

By W. M. Banks, Esq., Liverpool.

[For a description of Dr. Thudichum's instrument refer to the article on ozæna in this volume by Mr. Banks, p. 200.]

There are two surgical accidents in which I am sure that Dr. Thudichum's instrument will not unfrequently be found of service. The first of these is the case of impacted foreign body in the nostril. Children, as every one knows, seem possessed of a mania for putting beads, marbles, beans, and similar objects into the nose. They seldom put them very far, or very firmly in, and there is no doubt that the actual impaction, or fixing of them, is often produced more by misdirected attempts to get them out

than by anything else. I should certainly, before using any forcible efforts at removal by instruments, see what effect a rapid stream of water passed up the other nostril would have in dislodging the foreign body. In the number of the Lancet for December 17th, 1864, Dr. Skinner, of this town, shewed that long before Dr. Thudichum's paper appeared he had been practically making use of the principle upon which it is constructed. Dr. Skinner discovered it by mere accident, the instrument he employed being one of Higginson's syringes. In this letter, he gave the following very interesting account of the removal of a bead from the nostril. "In June, 1860, the child of one my patients was brought to me,—a little girl, two years of age, who had pushed an Indian bead up the right nostril. The mother had made vain attempts to pull it down, and succeeded in pushing it entirely out of sight, accompanied with profuse bleeding and terrific squalling. While the mother held the child's face over my basin, I forcibly injected some tepid water, by means of Higginson's syringe, up the left nostril, when the bead with one single compression of the elastic cylinder made its appearance in the basin."—*Liverpool Medical and Surgical Reports, Oct.* 1868, p. 110.

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1866—1868.

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